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German Doctors in America — 1887-1914

Their Views and Impressions of American Life and Medicine

THOMAS N. BONNER*

THOSE familiar with the past of American medicine know well the magnetic influence which German universities and laboratories exerted on America's medical men in the last quarter of the nineteenth century. Fired to learn the very latest from the great laboratories devoted to bacteriology and pathology, they headed for study in Berlin, Breslau, Leipzig, Munich, Heidelberg, or Strassburg, while specialists in clinical subjects hurried in droves to Vienna, where special courses in the English language were quickly arranged. In virtually every specialty, the German-speaking world was the hub of medical study, research, and teaching. Americans went abroad to study pathology, anatomy, bacteriology, pharmacology, physiology, ophthalmology, internal medicine, orthopedics, pediatrics, surgery of all kinds, psychiatry, and dozens of other special fields.[1] The stream of American medical men studying in Germany swelled to a torrent in the late 1880's, fell off somewhat in the 1890's, and was definitely on the decline in the decade and a half before World War I.[2]

Less familiar, however, is the story of how the greats of German medicine in this period began to explore the medical world on this side of the Atlantic. Apologetic and hesitant at first, they grew steadily in number after 1890 until by 1914 virtually every outstanding figure in German medicine had made the long trip to America to observe, to criticize, to encourage, or to envy, as the case might be. Some came more than once, and the great

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1 Only in dentistry did the American play tutor to the energetic German; a significant number of German students came to America to study dentistry before 1914 and the dental clinic of Willoughby Dayton Miller in Berlin became the fountainhead for modern German dentistry. "Miller, Willoughby Dayton," I. Fischer, *Biographisches Lexikon der Hervorragenden Ärzte der letzten Fünfzig Jahre.* Berlin, 1932-33. 2 vols., II, p. 1045; *Pacific Dental Gazette,* 1928, *36,* 774, quoted in Arthur W. Lufkin, *A history of dentistry,* 2d ed. Philadelphia, 1948, pp. 127-128.

2 This article is the result of a larger interest in the travels and studies of American medical men in Germany, 1870-1914, and the resulting influence on American medicine. The Fulbright Commission made possible a year of source investigation in Germany during 1954-55.

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ophthalmologist Hirschberg made three trips to the New World between 1888 and 1905. Beginning in the late 1880's, too, a number of important international medical congresses were held in America and each one attracted more of the German leaders than the last. New York was the site of international conferences in dermatology in 1907 and surgery in 1914, Washington of the general medical congress of 1887 and the special hygiene meeting of 1911, while Philadelphia played host to the great international tuberculosis gathering of 1908 and Buffalo to the school hygiene convention in 1913.[3]

One of the first to record his impressions of American medicine in this period under study was the obstetrician Edward Martin, who attended the International Medical Congress in Washington in 1887. Martin noted the obvious split among the American doctors at the meeting between the better-trained eastern doctors, who were working for higher standards and better medical schools, and the representatives of the smaller, chiefly western, schools who favored the status quo. Like those who came after him, Martin never quite understood the workings of the American press. He received a poor press throughout his stay in America after he threw a too-persistent reporter out of his hotel room. His great physical bulk was the subject of exaggerated newspaper attention and he was accused of consuming "thousands of pounds of ice cream" and other American delicacies. On his second visit to America in 1908 he found that the press had fortunately forgotten him and he enjoyed a visit to Kelly's clinic in Baltimore, an especially friendly reception in Los Angeles, a talk in German to immigrant doctors in St. Louis, and an interview with Theodore Roosevelt in Washington, who "spoke enthusiastically of Germany." An importunate former student got him to go to Saint Joseph, Mississippi, where the visiting celebrity was accorded the keys to the city, a colorful parade, and his biography in all the local papers. A cakewalk was staged in his honor, during which his friend and the mayor threw off their jackets and danced with the rest of the town to the accompaniment of a Negro band. Martin pronounced the occasion "Ein unvergesslicher Abend!"[4]

Julius Hirschberg, one of the great eye-surgeons of his generation, also attended that first great medical conclave in Washing-

[3] Hans J. Haferkamp, *Die Internationalen Medizinischen Kongresse und der Weltkrieg.* Berlin, 1937, pp. 22-33.

[4] A. Martin, *Werden und Wirken eines Deutschen Frauenarztes.* Berlin, 1924, pp. 155-162.

ton and spent the following months journeying across the nation. He published his impressions of the United States the following year, commenting on American railroads, the phenomenal growth of Chicago, the size and influence of the German immigrant group in America, and the rising quality of the medical institutions of the United States.[5] He was fascinated by Chicago, where he found the Armour packing facilities alone greater than those of Berlin, but like other German visitors he spoke sharply of the government's failure to inspect meat products. The buildings in Chicago he found even in 1888 "himmelanstrebend." Everywhere he saw evidences of the much-vaunted American practicality and effort to save labor. He noted the coin boxes on the streetcars and in Minnesota he saw a lamp-lighter pushing a little cart around. The working people he met were uniformly independent and lacking every trace of servility. "In the United States," he reported to his countrymen, "well-to-do people have to do many things which among us are performed by servants . . . one gets accustomed to it and takes no notice."

Culturally, America was still backward. He discovered a considerable number of beautiful paintings, but all of them imported from Europe. He was greatly disturbed, too, by the characteristic boastfulness of Americans. When he visited the panorama of the Battle of Shiloh, he was told by his guide that it was the greatest art work in the world and the bravery exhibited at Shiloh, the finest in world history. "This unpleasant exaggeration," recalled Hirschberg, "made me physically ill at ease, so that I left the place before my friends."

He was especially interested in the treatment of the Negro minority in America, which he considered shameful, but when he baited a Pullman porter with jibes at the prejudice of "free" Americans, the Negro unexpectedly replied "that he loved his country, had never suffered harm because of the color of his skin, and hoped for better conditions and more education for the colored people in the future." Hirschberg recalled that "I was surprised and must admit that the view of this Negro could serve as a model for many Europeans." Hirschberg's conclusions on America were shrewd and free from either envy or contempt. They make interesting reading almost three-quarters of a century later:[6]

[5] J. Hirschberg, *Von New York nach San Francisco; Tagebuchblätter*. Leipzig, 1888.
[6] *Ibid.*, p. vi.

> The impression which America made on me is a favorable one. It has a significant present and, as I am also convinced, a still more significant future. To be sure the conditions in America are not free of their shady side. I have seen enough not to be overwhelmed by first impressions. But I do not belong to those burdensome fellows who in America are called fault-finders. My conviction is that we can learn much from the Americans—just as they can from us.

But Hirschberg had strong reservations about American medicine in 1887 and especially about American medical schools. He visited seven schools and concluded that "in Germany the smallest university has far better facilities than all of these together."[7] The gynecologist Winckel confirmed Hirschberg's impressions in 1889 when he criticized the "dubious" status of America's medical schools, the low professional status of physicians (especially the cut-throat competition), the omnipresent quacks, and the hospitals which left so much to be desired. Despite contributions in dentistry and gynecology, wrote Winckel, the American doctor "stands lower in general education as in specialized knowledge than his colleagues in Germany, Austria and France."[8] Throughout the 1890's similar German comment on the inferiority of American medicine continued in the pages of the medical journals. Typical were the sardonic notices of medical co-education in America, the lack of state controls over medical practice, low standards in medical schools, the lack of public inspection of meats (which had caused German authorities to bar American pork in the 1880's), private support of hospitals and medical schools with no university or state connections, the too-strict code of ethics which in fact encouraged and publicized the heresy of homeopathy in the United States, and the political struggle within the A.M.A. which had cast a cloud over the international Medical Congress in 1887.[9]

The great von Helmholtz, who came to the Columbian Exposition in 1893, shared many of these unfavorable impressions of New World medicine. But he took the charitable view that America was still in the making, its potentialities were great, and judgment ought to be reserved. "America surprises one," he observed, "with its tremendous dimensions and the tremendous work that has already been done. But this is only the smallest part of

7 *Ibid.*, p. 55.

8 *Jahresbericht über die Leistungen und Fortschritte in der gesamten Medicine.* Berlin, 1871-1915, 49 vols. XXIII, pp. 296-297.

9 See the letters of the American correspondent of the *Deutsche Medicinische Wochenschrift*, 1886, *12*, 9, 40, 59, 433.

what is still to be done and doubtless will be done in the next century. Up to now, however, everything is highly unfinished and appears in part highly unreasonable and paradoxical."[10] His wife, however, was less charitable in her opinions of the great democracy across the sea from Europe. "God took a holiday," she opined, when he "created the interior of America, with its monotonous, unrelieved stretches of nothingness." The land she found flat as a table, always the same, here and there a board house with veranda and perhaps a tree, then an ugly wooden town with wooden lunchroom or saloon and maybe a hotel better suited to hens than people. The courage of Americans in settling such areas she found overwhelming. She saw few women or children and the men were pale and bowed, all chewing something, all unspeakably unpleasant looking, not peasant types according to European experience, only vulgar and tired. She and her husband were forced to dine with 100,000 flies on a "horrible" Pullman diner. She noted the ugly speech and gestures of her fellow diners and found them even less charming when they let their children loose on their neghbors. Only Boston met her fastidious European standards. That old Puritan city she found "wonderful, very English, correct and worthy, nice clean streets, beautiful houses overgrown with ivy, and on the other side the university city of Cambridge with Harvard University." After the unspeakable West, Mrs. Helmholtz could only rejoice when she read the date 1657 on a church. Like many other early German travelers to America, she concluded that one became "a fanatic European" in the New World.[11]

By the end of the decade, however, opinion on America and especially the status of her medical institutions had begun to change. Arnold Keiler of Berlin warned in 1898 that whoever thought that the education of American physicians was inferior to Europe would be thoroughly re-educated after visiting the medical schools and hospitals of New York. He found that the hospitals there especially had already surpassed those in Germany in equipment, medical records, and scientific routine. He marvelled at the precise division of labor which made possible the careful treatment and accurate, scientific observation of each patient. Medical instruction in the New York Postgraduate Medical School and Hospital he rated as superior. The material there was abun-

[10] Leo Koenigsberger, *Hermann von Helmholtz*. Braunschweig, 1902-03. 3 vols., III, 90.
[11] *Ibid.*, pp. 81-93.

dant, the scientific spirit evident, and most remarkable of all, this great institution was supported entirely from private funds.[12]

The great German-American pediatrician, Abraham Jacobi, invited German doctors the following year to come and see for themselves the changes that were taking place. The low opinion of American medicine in Germany, he insisted, was mistaken and he undertook the writing of a whole series of "American Letters" to the *Deutsche Medicinische Wochenschrift* to promote better understanding and foster an appreciation for the scientific accomplishments of his new fellow-countrymen.[13] By the turn of the century, a notable rise of interest in things American was apparent in the German profession. Letters from America became a feature of the leading medical publications in Germany. There was still criticism of the separation of medical faculties from the universities in America and the absurdity of competing medical Schools in the same city was scorned, but the abundance of superior equipment and the evident determination to raise standards were also attracting praise. The compulsory attendance at medical classes in America, which was repugnant to visitors reared in the traditional freedom of a German university, was now occasionally praised as forcing the student to get down to work and avoid wasting time.[14]

More and more notables of the German medical world took Jacobi's advice to come and see for themselves. In the fifteen years from 1899 to 1914, America was honored by visits from psychiatrists and neurologists like Forel, Wollenberg, Freud, Lilienstein, and Saenger; the incomparable anatomist Waldeyer came twice in 1901 and 1904; great orthopedists like Hoffa, Lorenz, and Lange were impressed with what they saw; Virchow's successor at Berlin, Johannes Orth, came in 1904; Ernst Fuchs, noted Vienna ophthalmologist, and Julius Hirschberg once more inspected facilities for eye care in America; some of the great teachers of Americans in Germany—Carl Ludwig, Friedrich von Müller, Paul Ehrlich, and the immortal Robert Koch himself—arrived between 1904 and 1908; dermatologists welcomed Erich Hoffmann during the same period; the best known German surgeons of these years paid their respects—Sauerbruch, Guleke, Trendelenburg, and von Eiselsberg; and in 1912 a "Studienreise" to the United States was undertaken by 250 German physicians and surgeons. Truly, the

12 Arnold Keiler, Der ärztliche Fortbildungsunterricht in New York. *Dtsch. med. Wschr.*, 1898, *24*, 352-354.

13 A. Jacobi, Amerikanische Briefe. *Dtsch. med. Wschr.*, 1899, *25*, 816-818.

14 Max Einhorn, Letter from New York. *Dtsch. med. Wschr.*, 1900, *26*, 567-568.

medical exchange between America and Germany was no longer a one-way proposition!

Some measure of the transition that took place can be gained from the comment of Robert Wollenberg, the famed psychiatrist, on his own experience. As late as 1898, Wollenberg reminisced in his memoirs, a trip to America "was considered at that time in my circle as something quite unusual, even adventurous. A good-for-nothing, to be sure, might be sent over, so that he might learn to work and in some cases return after many years rich as Croesus. One heard also of the marriage of rich American ladies to poor counts and princes of Europe." But that a university professor like Wollenberg should make the trip was something else again. To be sure, the occasion for Wollenberg's own visit of 1898 was marriage to a Canadian girl.[15]

But when the great anatomist Waldeyer came to Yale in 1901 as delegate of the University of Berlin to the bicentennial exercises there, he was convinced that the colonial era of American medicine was drawing to a close. He met Franklin P. Mall at Johns Hopkins and saw his old student, George Pierson, in Philadelphia and was much impressed by the anatomical institutes in both places. He also inspected the anatomical facilities at Columbia and saw Minot's work at Cambridge. The comparative anatomy collection at Yale made an especially deep impression on him. Waldeyer concluded with respect to the American facilities in his own field that a comparison with German anatomical institutions was "not out of the question." In connection with the special exercises at Yale, Waldeyer received an honorary degree, along with other notables, including President Theodore Roosevelt. He liked T. R., whom he saw as a man of considerable stature in the world of politics and a friend of Germany. The two men discussed a book by Waldeyer's colleague at Berlin, Professor Delbrück, on the history of the art of warfare, as well as Roosevelt's own book on big game hunting.[16]

In the year 1904 alone, Paul Ehrlich, Albert Hoffa, Carl Beck, Johannes Orth, and Julius Hirschberg were all in the United States. The well-known Ehrlich was given a hero's welcome in New York, Baltimore, Washington, and Chicago. The inventor of the "Magic Bullet" was enchanted by the simple hearty existence and practical sense of the Americans.[17] Carl Beck was an

15 Robert Wollenberg, *Erinnerungen eines alten Psychiaters*. Stuttgart, 1931, p. 94.
16 Wilhelm von Waldeyer-Hartz, *Lebenserinnerungen*. Bonn, 1920, pp. 308-314.
17 Martha Marquardt, *Paul Ehrlich als Mensch und Arbeiter*. Berlin, 1924, p. 73.

immigrant physician who won a remarkable reputation in New York. In a speech to the Germanic Conference in St. Louis in 1904, Beck reviewed the enormous debt owed by American medicine to Germany, not only for the great number of American doctors who had been trained in Germany, but for the decisive role played by immigrant Germans like Jacobi, Heitzmann, Zipperlen, and Hermann Knapp, the last the "Father of American Ophthalmology."[18] A number of native American eye surgeons, in the opinion of the visiting Julius Hirschberg, were also worthy of praise, although he too felt that immigrant specialists from Germany had made a decisive contribution to American ophthalmology. As yet America had produced no one of the caliber of von Graefe, Helmholtz or Donders, but he liked the numerous journals of ophthalmology and complimented the work of Americans in refraction, accommodation, and optometry. At a dinner in New York Hirschberg was asked whether there was a distinctive American school of ophthalmology, to which he replied: "There are in America many excellent ophthalmologists. The practical work is not essentially different from that of Europe; the scientific work too runs along the same lines. The special emphasis on refraction and muscle disturbances does not justify us in setting off a separate American school of ophthalmology from the European."[19]

The alert and observant Hirschberg noticed many changes in American life since his first trip to America. With each successive visit, he found more and more of the civilized comforts to which the educated European was accustomed. Newspaper reporters, however, did not change. Once he was cornered by one in his bathtub and on another occasion a few guarded comments on the wearing of glasses in America brought the screaming headline that "Americans are Eyeglass Fiends says German Expert." He noticed the absence of soldiers in America; on the entire trip from New York to the Canadian border he met not one soldier and even on the border there was none. He made an interesting observation on the position of women in America. He disputed the common European conception that the American husband was dominated by his wife and that she lived a life of quiet luxury. The average American housewife worked much harder than her Euro-

[18] *Münch. med. Wschr.*, 1904, *51*, 1792-1793.

[19] J. Hirschberg, *Amerikas Augenärzte im 19. Jahrhundert* (Geschichte der Augenheilkunde, Drittes Buch, zwölfter Abschnitt, Leipzig, 1915), pp. 194-195; Meine dritte Amerika-Fahrt. *Med. Klin.*, 1905, *1*, 1059.

pean sister in his view. There were fewer servants and no governesses to relieve the wife and mother of responsibility. He was continually surprised during his American trip by the frequency with which German was still spoken in many cities. Frequently he receive a German answer to a question put in English. Everywhere he encountered German-speaking hotel managers, clerks, waiters, guides, and train conductors. And the practical-mindedness of Americans he found almost universal. Even scientific men in the United States were constantly asking for the practical explanation or use of medical theories or hypotheses. When he gave an address on Arab ophthalmology in a large American city, he found the hall half full and the interest only half-hearted, which confirmed him in his view of the practical nature of the American physician's interests.[20]

The orthopedic surgeons Hoffa and Lange reported favorably on what they had seen of the progress of their specialty in America. Both expressed pleasure at the orthopedic hospitals they found, particularly in the East. After seeing the facilities for crippled children in New York, Hoffa wistfully expressed the wish that Berlin might some day have comparable equipment. He found that American specialists were very much interested in the work of Adolf Lorenz, who had visited America in 1902 and was famous for his work in hip dislocations. The orthopedic work which he saw performed he evaluated as on a high level and opined that "especially in a technical-mechanical respect we can learn quite a bit from the Americans." Like his predecessors, he was molested by reporters and after he had covered his face to avoid having his picture taken, his hand and arm appeared in the following day's edition with the caption "The arm and hand of the famous German surgeon."[21]

Professor Lange, who came somewhat later, complimented American work in orthopedics heartily. To illustrate the difference between the facilities in this field in Germany and America, he asked his readers to compare the cities of Boston and Munich. Both had approximately the same population, but in the Boston area over three hundred beds for orthopedic cases were available compared with less than fifty in Munich. The same ratio applied also to institutions for the crippled. He praised the Widener Home for Crippled Children in Philadelphia as without peer

[20] J. Hirschberg, Meine dritte Amerika-Fahrt. *Med. Klin.*, 1905, *1*, 1085-1139.

[21] A. Hoffa, Reisebrief aus Amerika. *Dtsch. med. Wschr.*, 1904, *30*, 996-998, 1141-1143.

anywhere in its services and facilities. Not only was the medical care first-class, but educational instruction, even to learning a trade, was provided. The results of this marked attention to deformities and to crippled children in America were in Lange's view striking. He saw fewer cripples on the streets and even in the hospitals than in Europe, probably because for decades orthopedic clinics had been made widely available. Those who had seen the work of American specialists, he remarked, would be modest about Germany's accomplishments in this field.

A part of the reason for American success, he felt, was due to the early and swift recognition of orthopedics as a specialty. This was made possible by the lack of distinction in American schools between major and minor subjects in determining the rank of professors. The great Harvey Cushing, for example, with his special work in nerve and brain surgery, could not have found a place in a German university, but it was typically and commendably American that here there should be haste to create a professorship for so able a man. Lange now had doubts about the strength and wisdom of the much-praised university training system of Germany. If the object of higher education was to train research workers, he wrote, then the German system was better, since more freedom was allowed to follow one's own individual interests; but if the purpose were to train efficient practical physicians, perhaps the American system was superior. After all, were not 90 per cent of all medical students destined for general practice anyway? Tradition, he concluded prophetically, was too strong in Germany to permit rapid change. Even compulsory class attendance was no longer anathema to him, since in America it produced graduates who "can do more and know more" than their German counterparts, at least in surgery and orthopedics.[22]

In other specialties as well Americans were winning praise from the acknowledged masters of medicine from Germany. Commendation for American sanitation and public health work came in 1905 when one German writer predicted that the Americans would succeed in Panama where the French had failed because of the progress already made by Americans in sanitary science. Despite newspaper criticism in America itself, the American sanitary corps in Panama was described as consisting of "capable men who stand high in their specialty. They have solved difficult sanitary

22 F. Lange, Amerikanische Reiseerinnerungen. *Münch. med. Wsch.*, 1911, *58*, 1404-1408.

problems with great skill in Cuba, Puerto Rico and the Philippines."[23] Carl Ludwig, master teacher to a generation of American physiologists, also found much to praise in the equipment of American laboratories in 1907. Amused by the abundance of materials supplied the teaching laboratories, he wrote that "Wenn wir in den deutschen Kursen Experimente an der *Maus* ausführen können, so nehem die Amerikaner dafür zum gleichen Zweck einen *Elefanten*."[24] Another famous teacher of Americans, Friedrich von Müller, wrote from his viewpoint as an internist when he compared favorably American achievements in his specialty with those in Germany, even going so far as to say that "if we disregard the language a large part of American medical literature could just as well have been written in Germany." He was astounded to see how much knowledge Americans possessed of German medical achievements, which he attributed to German immigration and the studies of Americans abroad. He made the surprising statement (at least to those used to American linguistic weakness today) in 1907 that "the American doctor knows Germany and the German language better than the German doctor knows America and the English language."

American universities were not the specialized schools to which von Müller was accustomed. Students received a much more general education, he found, which stood them in good stead whatever work they later entered. He noted the poor salaries of American professors and commented on the greater influence of deans, presidents (like Eliot), and other administrative officers. He approved of the common life of the students in dormitories and lunchrooms but was less enthusiastic about the prohibition of alcohol from many campuses. In the medical schools, he was warmly enthusiastic about the practical nature of instruction in physiology. Students performed actual analyses of blood, milk, and other substances. He applauded the emphasis given to the student's ability to carry out experiments himself, which did not come in Germany until the postgraduate years. He remarked the more extensive use of apparatus and especially of animal experiments for teaching purposes (4,000 frogs were used in one year at one university). This he found much superior to simply hearing lectures or watching demonstrations. This held true also for pathology, pharmacology, and surgery. He saw pharmacology stu-

[23] *Münch. med. Wsch.*, 1905, 52, 1845-1846.

[24] Friedrich von Müller, *Lebenserinnerungen*. München, 1951, p. 163.

dents in New York watching in small groups the effect of drugs on an anesthetized dog. "How much more solidly," he wrote, "must these self-made observations impress themselves upon the memory; how well they are suited to create clear concepts about the effect of drugs!" Like other German observers, he saw the need for drill sessions and frequent examinations in German medical schools after seeing their beneficial effect here. Both he and Lange were greatly impressed by the nurses in American hospitals, whom von Müller found better educated, from better homes, and treated with more respect than in Germany.[25]

The International Dermatological Congress of 1907 attracted five German skin specialists to New York, among them the world-renowned Erich Hoffman. Hoffman was less sanguine than von Müller and Lange in his estimation of American medicine but conceded that mighty progress had been made. He was less willing to concede that the practical bent of American medicine was a blessing and was pleased to note a trend in the direction of "deeper scientific penetration." But Europeans could learn something, too, especially in therapeutic methods, from American dermatologists. In Chicago he saw wonderfully equipped private sanitaria, in which excellent surgeons showed him samples of their skill. He was amazed at the private offices of his American colleagues, with their almost complete clinical equipment as well as a small private laboratory in most cases. He also saw the palatial homes of some of the better-known specialists which "betrayed the huge incomes from their practice," putting those of German specialists in the shade. In Boston, he admired the operating rooms of the surgical clinic at the Massachusetts General Hospital and in New York Rockefeller Institute made an "overpowering impression" on him. Hoffman, too, was troubled by the ubiquitous reporters, who in St. Louis insisted that he comment on whether the planned Mississippi bridge should be toll or free.[26]

In 1908 all America looked forward to the impending visit of Robert Koch, next to Pasteur perhaps the best-known medical man to Americans. In New York, the German Medical Society held a great testimonial banquet for him, at which Andrew Carnegie was also an honored guest. Koch thanked Carnegie for his recent munificent gift to the Robert Koch Institute and paid tribute to his generosity which he said was for him "the embodi-

[25] Friedrich von Müller, Amerikanische Reiseeindrücke. *Münch. med. Wsch.*, 1907, *54*, 2388-2390, 2430-2434.

[26] Erich Hoffmann, *Wollen und Schaffen*. Hannover, 1948, pp. 208-218.

ment of the best qualities of the American." Koch proceeded from New York via Niagara Falls (a "must" for all German visitors) and Chicago to Keystone, South Dakota, where his brother owned a farm. From there he travelled on to San Francisco and Honolulu to his ultimate destination, Japan. His trip across the continent, he wrote to a friend, was strenuous "with many night train rides, crowding reporters, unexpectedly sudden temperature changes, so that one day you are very lightly clothed, the next it is necessary to unpack your overcoat. Finally we were caught in the stream of people who were pouring into San Francisco from all sides to see the arrival of the fleet [this was the year of the famous around-the-world tour] and to celebrate in American fashion (i.e. as loud as possible)."[27] Koch had little to say (at least publicly) on what he saw of American medicine but he did compliment Herman Biggs on the sanitation and public health work being done in New York. "Mein lieber Biggs," Koch told him, "Sie müssen zugeben, dass die meisten wissenschaftlichen Entdeckungen auf diesem Gebiet in Deutschland gemacht wurden. Aber ich muss zugeben, dass Sie hier in Amerika, und besonders in New York, uns in deren praktischen Anwendung, weit voraus sind."[28]

German surgeons were no less curious to see at first hand what their American colleagues were doing, and many accepted invitations to lecture, hold clinics, or receive honorary degrees during these years. Ferdinand Sauerbruch, at the beginning of a long and distinguished career, came to America in 1909 at the request of the American College of Surgeons to demonstrate his famous "Unterdruckkammer." The impression which New York City made on him was overpowering, according to his later account, with its numerous, tall buildings, the crush of traffic, and the number of automobiles on the street (1909!). He spoke in English from a translated text to the surgeons of New York at a well-attended meeting, then undertook a trip through the East and Middle West. The usual route for distinguished medical visitors carried them through the great centers of the East—Boston, New York, Philadelphia and Baltimore—then on to Chicago and St. Louis and, more frequently as time went on, Rochester, Minnesota. Sauerbruch's tour ended in Rochester where he studied the Mayo system closely, watched their operations, and held long conversations with the famous brothers. The Mayos for their part

27 Bernhard Möllers, *Robert Koch*. Hannover, 1950, pp. 345-347.

28 Charles F. Bolduan, Hermann M. Biggs, Bahnbrecher in der öffentlichen Gesundheitspflege. *Festschrift zum 80. Geburtstag Max Neuburgers*. Wien, 1948, p. 66.

were very much interested in Sauerbruch's invention and discussed every detail and possibility with him. As he was leaving for Europe he was pressed by reporters for his over-all impressions of America. His impatient reply was reported in the press as "Too much cocktail and too much appendicitis!"[29]

Less well known, but shrewder and more thorough in his observations, was the German surgeon N. Guleke. American surgery, which he held "scarcely existed 20 years ago" and had borrowed everything from Europe, was now not only independent of the Old World but had actually pushed ahead in many fields. He noted the counter-stream of German surgeons now crossing the Atlantic and predicted that in time they would equal the numbers of Americans studying in Germany. He spent three months in 1909 surveying the medical institutions on the East coast. The hospitals he visited he pronounced an "astounding luxury" and found nothing in Europe to compare with Mount Sinai Hospital in New York. This he found all the more remarkable when the purely private basis of its support was considered. But the money lavished upon the hospitals by private philanthropists had been used wisely and he applauded the bright sick wards with few beds, the comfortable visiting rooms, the number of private rooms, and the practical use of roofs for sun and air and views. Operating rooms he found with exceptions to be large, bright, and practical. Clinics and dispensaries were frequently model institutions and here the organizational talent of Americans shone especially bright. The medical records, case histories, and other paper work of hospitals and clinics were quickly and efficiently cared for. Especially noteworthy was the practice of hospitals in meeting their own needs as far as possible. They made their own index cards and temperature charts, and were seldom without a laundry, sewing rooms, and a carpenter shop. He was also struck by the number of visiting physicians at each operation. "It is very characteristic of the American doctor," wrote Guleke, "that he tries to educate himself further in every way."

Even more surprising were Guleke's observations on the work being done in American laboratories at this early date. What impressed him most in American medicine, said Guleke, was not its wonderful institutions and buildings "but it is the pleasure one meets here in scientific work and experimentation and an idealism which from the usual view of Americans one would hardly ex-

[29] Ferdinand Sauerbruch, *Das war mein Leben.* Bad Wörishofen, 1951, pp. 149-154.

pect." It was not enough to excel in practical work but "The Americans want . . . also to be able to stand in scholarly relations with their old masters in Europe." There were teachers enough in America, like Crile and Cushing, to inspire the young with a veneration for experimental work. Like von Müller and others, Guleke remarked the emphasis which teachers like Cushing put on working with living animals and not simply on corpses. He shared too his predecessors' observation that much of the credit for the superior care afforded by hospitals here should go to American nurses, who were "incomparably better" than in his own country. He sometimes saw young nurses who seemed to know more than many doctors.

Operative techniques in America he discovered were surprisingly uniform in method, approach, and hand positions. He noted the relative slowness of American operators and the exceptionally careful blood-stopping. Yet they achieved brilliant successes with their caution. He saw Cushing remove a walnut-size brain tumor with no bleeding or disturbance of pulse or respiration. American incisions were small, and surgeons had only a sympathetic smile for the length of German incisions in appendicitis and gallstone operations. Surgeons operated in general much more freely in the United States. Patients were much more likely to risk an operation in the hope of speedy recovery and many cases which in Germany would be left to the internist went to the operating table. He felt that Americans were far ahead in abdominal surgery and in blood transfusions.[30]

The Viennese surgeon von Eiselsberg followed the same circuit the following year, visiting the Rockefeller Institute in New York, Halsted's clinic in Baltimore, the Crile Clinic in Cleveland, and observing the work of Keen in Philadelphia, Murphy and Bevan in Chicago, and the Mayos in Rochester. He was most impressed by the Rockefeller Institute, where he was welcomed by Alexis Carrel. He was shown the excellently arranged operating rooms and sick rooms and the world's best equipment for animal experimentation. He saw Carrel remove a kidney from a dog and replace it, amputate another dog's leg and replace it with the leg of another, and he was fascinated by his work on the hearts of chickens kept alive for weeks and months. Of all the surgeons he saw in operation he considered J. B. Murphy the very best, a

[30] N. Guleke, Chirurgische Reiseeindrücke aus Nordamerika. *Münch. med. Wsch.*, 1909, *56*, 2321-2324, 2380-2383, 2426-2428.

unique combination of skilled operator, research worker, and great teacher.[31]

It was in America that Sigmund Freud in that remarkable tourist year of 1909 first attempted to trace the development and content of psychoanalysis. He gave five lectures at Clark University at the invitation of G. Stanley Hall. Though later harshly critical of America, he still shared at this time some of the enthusiasm that had led him as a youth to obtain copies of the Gettysburg Address and the American Constitution.[32] A German neurologist visiting America in 1910 expressed keen disappointment at American facilities for the care of the mentally ill and found little in American work in neurology or psychiatry that was new or exciting. An exception was the work being done by the German-American Adolf Meyer.[33] A seemingly conflicting report that same year came from the pen of Aldred Saenger, a celebrated neurologist from Hamburg, who saw considerable evidence of progress everywhere in American medicine. Since the latter's report was delivered at an A.M.A. convention, however, it might easily have been inspired by deference to his hosts.[34]

Though distinguished German visitors continued to come to America after 1910, their number grew smaller as 1914 approached. All in all it had been a remarkable decade for American medicine. From haughty criticism and a widespread conviction of American inferiority in medicine in 1900, the best known men in German medical life were turning to praise and to appreciate. It has long been assumed that it was well after the Carnegie Report and the setback given German medicine in World War I that American medicine won its self-respect vis-a-vis Europe. If the reports of contemporary Germans are any indication, the tide had turned much earlier. What impresses one today is the shrewdness and the foresight, as well as the objectivity, of the views of these German doctors on American medicine and American life a half-century ago. Consider, by way of conclusion, the unheeded lessons for Germany which lay in Professor Lange's closing words in his report to the Munich Medical Society in 1910:[35]

31 Anton von Eiselsberg, *Lebensweg eines Chirurgen.* Innsbruch-Vienna, 1938, pp. 197-207.

32 Sigmund Freud, *Die Medizin der Gegenwart in Selbstdarstellungen,* L. R. Grote, ed. Leipzig, 1925, IV, p. 1 ff.; Gregory Zilboorg, *Sigmund Freud.* New York, 1951, pp. 27-28.

33 *Münch. med. Wsch.,* 1910, *58,* 1954.

34 *J. Kans. med. Soc.,* 1910, *10,* 239.

35 F. Lange, Amerikanische Reiseerinnerungen. *Münch. med. Wsch.,* 1911, *58,* 1408-1409.

We have a great past in medicine, but we still stand under the influence of this past and overlook thereby the requirements of the present. The requirements of the present can be learned most quickly in America. That is the chief advantage of the Americans that they are a young people and therefore do not cling to tradition. The unprejudiced manner with which Americans approach the solution to every problem has made a great impression on me. The American does not ask of any task "How has this been done" but he asks "How can this be done best." There are, of course, disadvantages to a lack of tradition, especially in areas where an old culture is indispensable, as art, music, painting, architecture. In general, however, I believe that the lack of tradition is of advantage in the development of America. The solution to all scientific, social, and political problems is completed over there much faster than among us. That gives a trip to America so much charm. . . . One sees there in the present what the future will bring us. . . . The more Germans who visit America, the better it is for us. For we can learn a great deal from the Americans!

Ancient Slavic Medicine

MIRKO DRAZEN GRMEK*

THE Slavic peoples today occupy the vast area in the middle of Eurasia extending from the Arctic Ocean and Bering Sea to the Baltic, Adriatic, and Black Sea. They descend from a common stock which in prehistoric times and before the Christian era lived north of the Carpathian Mountains, in the basin of the Dnieper, the Vistula, and the Oder, i.e., in one part of the present-day Poland and the European USSR. To ancient Mediterranean merchants and geographers that was a remote, cold, and inaccessible outpost, farther to the west than Scythia itself, and therefore it is not surprising that the first news about the Slavs dates as late as from the first and second centuries of the Christian era. This earliest information comprises only data on the geographical distribution of some Slavic tribes, and only Tacitus' record (*Germ.*, 46) is of greater historical importance. According to it, the Slavs differed from the neighbouring nomads in their art of house building and their preference for walking.

The beginning of the Christian era is marked by the great diaspora of the Slavs; thus by the sixth century they had penetrated as far as the Danube and crossed the limes of the Roman Empire. The Great Migrations drew the attention of the small Mediterranean world of those days to the existence of the northeastern territories of Europe. *Per immensa spatia natio populosa consedit*—this is how, about 550 A.D., the Gothic historian Jordanes (*De orig. Get.*, V, 34) recorded the expansion of the Slavs.

In their ancient homeland the Slavs developed certain aspects of a culture of their own and consequently also the arts of their own primitive medicine, which was analogous to the medicine of the rest of the primitive European peoples (e.g. the Germans and Celts) and to some extent was similar to the Greek medicine of the Homeric age. Between the sixth and twelfth centuries the Slavs gained knowledge of the achievements of the Greek, Latin, and Arabian civilizations, particularly through Christian missionaries and Arabian merchants. Shortly after their conversion to Christianity ancient primitive medicine was subject to marked changes and was persecuted as a remnant of paganism. It began to disappear

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between the tenth and twelfth centuries, although its traces still persist in the abundant folklore of the Slavic peoples.

Only a very limited amount of written material on the autochthonous civilization of the Slavs and their mode of life until the tenth century has been preserved; particularly scant are the records on Slavic medicine before their contacts with the Graeco-Arabian civilization. Of considerable importance for the subject under discussion are therefore the archeological and anthropological remains, the relics in the folklore, as well as the results of comparative philological studies.

In the words of the Byzantine historian Prokopios (*De bello Got.*, III, 14 and 22) the Slavs were tall and slender, of great strength and dexterity, of a healthy constitution, with pink complexion and fair hair. Maurikios (*Strat.*, XII, 5) records that "they easily stand heat, and cold, and rain, and scarcity of clothes, and lack of food." In general, a number of Greek, Latin, and Arabian writers of the sixth to tenth centuries (e.g. Léon, Theophylaktes, Kardīzī, Rosteh) mention with admiration the healthy constitution and considerable physical resistance of the Slavs, particularly the ease with which they tolerate lack of food and cold. This was of course also a consequence of the harsh climate and their primitive mode of life. It is easy to understand that the Slavs left the impression of a robust and resistant people on the sensitive Byzantine authors. It must be emphasized, however, that even the German author Widukind (*Res gestae Sax.*, II, 20) characterizes them in the following terms: "Genus hominum durum et laboris patiens, victu laevissimo assuetum, et quod nostris gravis onere esse solet, Slavi pro quadam voluptate ducunt."

The investigations of the skeletons found in paleoslavic tombs have confirmed the majority of the quotations of the mediaeval authors. Thus, for instance, it has been stated that men were about 165-175 cm. in height. Tombs containing infants and juveniles were numerous. Judging from the excavations of mediaeval Slavic skeletons, it appears that life expectancy did not go beyond 20 to 25 years.

The great number of ancient Slavic synonyms referring to fever (*jeza, ogon', ognica, zimnica, trjasavica, groznica, ograzhka,* etc.) offer evidence that the Slavs had been very much exposed to acute contagious diseases, among which the Rickettsiae are particularly worth recording. The climate in their old homeland was moist and unhealthy. The numerous marshes and dense damp

forests, particularly in the region of Polesje (along the Pripet River), were well suited to the endemic incidence of certain diseases. It is of medical interest to note that in spite of the frigid climate, the mentioned region was a fertile soil for the development of malarial conditions which from ancient times had ravaged it. The old Slavic term *rast'* for splenic enlargement is revealing in that respect. An example of an endemic disease of recent times is the Volhynian fever, caused by a form of Rickettsiae and transmitted by lice. There is no doubt that as early as the Middle Ages the settlers of Poland and West Russia suffered from it. Furthermore, there is philological evidence of the incidence of pediculosis in ancient times. It is worth referring also to a disease of the hair, which was particularly frequently met with in the region of the Vistula, as proved by its name: *coma Vistulae* or *plica Polonica.* Probably that disease was not a pure nosological entity and the term included a combination of pediculosis (with secondary pyodermia and eczema) and some mycotic conditions. Ibrāhīm ibn Ja'kūb mentions in the tenth century that the majority of the Slavs suffered from skin rashes and swellings. Also al-Mas'ūdī notes that diseases of the skin and of the hair were of frequent occurrence among them.

Lesions in ancient Slavic skeletal remains can be traced to certain diseases. Considering the climate in their homeland the frequent rheumatic changes are not surprising. In this connection there are some comparative philological observations on the extensive use of the ancient term *d'na* denoting both gout and bone pains and sometimes even abdominal colic. This term is found in late mediaeval texts in various Slavic languages. In specimens of paleoslavic bones traces of trauma and fractures are frequently encountered. Thus, bone tuberculosis, spondylarthrosis ankylopoëtica, and even nonspecific osteomyelitis have been diagnosed. At the southern Slavic mediaeval necropolis [cemetery] of Hinga (near Subotica) a skeleton with unusual multiple lesions in the skull has recently been excavated. Upon detailed examinations I can state in all probability that this individual had suffered from cancer of some parenchymatous organ with metastases in the skull and the os ilium. Another skeleton of interest in the same cemetery is that of a pregnant woman with the skeleton of the fetus inside the pelvic girdle. It is assumed that the woman died in labor. Similar cases have been found in the ancient Slavic necropolis at Ostrów Lednicki in Poland. It has been revealed there that a woman of the tenth century died in labor owing to a too small pel-

vis while the cause of death of another expectant mother was the oblique pelvis. Both women were buried with the fetus in their womb. This example demonstrates that the Slavs did not employ Caesarian section even on a dead body.

The east-west orientation of tombs is a characteristic feature of certain Slavic necropolises. There are, however, exceptions to the EW astronomical orientation. Škerlj explains that the location of the tomb was determined by the actual position of the sun at sunrise on the day of burial. On the ground of that assumption Škerlj has been able to reconstruct the seasonal death rate among the settlers of Bled (ancient Slavic necropolis of the seventh and eighth centuries). These studies lead to the conclusion that the mortality rate was higher in the winter months than in warm weather, reaching its height in spring and late fall. The lowest mortality was in June and July. It may be considered that pneumonia, seasonal infections, catarrhal and rheumatic ailments were the major causes of death.

Of special interest are the paleopathological investigations of specimens of teeth. Euler has observed that 2.5 per cent of teeth belonging to the Slavs of Silesia of the tenth to thirteenth centuries had cavities and that 17.5 per cent of individuals had at least one carious tooth. A considerably higher incidence of carious teeth has been evidenced by Howorka in the remains from Ostrów Lednicki. Krušič has found that among the mediaeval Slavs of the Pannonian Plain (necropolis of Ptuj) the number of carious teeth amounted to 4 per cent, whereas among the Slavs in the Alps (necropolis of Bled) this figure increases up to 10.5 per cent. It has been stated as well that at least one carious tooth occurred in 40 per cent of the southern Slavs of that period. Recent data show that this percentage has doubled since the Middle Ages. Comparisons of material dating from various epochs reveal three tendencies: constant increase of percentage of dental caries, higher incidence in children, and gradual transition from the molars to the premolars and the incisors. Heavy enamel abrasions and traces of parodontosis are frequently found in specimens of ancient Slavic jaws.

Remarkable data about the ailments of the ancient Slavs are revealed, thanks to comparative philology. It appears that besides fever and rheumatism the most common maladies were hernia (*kila*), catarrh (*neduha*), asthma (*sip' and odishka*), and conjunctivitis (*grjemježhlivij'*). The term *jazva* was used for wound, when the crust formed it was called *strup'*, and upon cicatrization, *blizna*. Infected wounds were *gnoj'*. Ulcer was called *vrjed'*.

There was high differentiation of pathological processes of the skin. Terms for such conditions were well known such as skin rash, erysipelas, leprosy, itch, lichen, acne, furuncle, boil, oedema, mole, wart, erythema, and even freckles. Pestilences ravaged the Slavs. The general terms for epidemics were *mor', zaraza,* or *kuga.* On the ground of philological evidence it may be concluded that the early Slavs possessed knowledge of the following diseases or syndromes: consumption, catarrhal diseases of the respiratory organs, angina, headache, gout, sciatica, arthritis, epilepsy, dropsy, jaundice, diarrhoea, dysentery, haematuria, bladder calculus, prolapse of anus, intestinal parasites, cataract, sexual impotence, etc. Psychoses, mental deficiencies, and certain bodily infirmities like blindness, deafness, dumbness, and lameness were carefully distinguished.

The general terms for disease are derived, as *pars pro toto,* from words denoting pain (*boljezn', bol'*) or incapacity for work (*nedug', nemosht'*). Thus the word *bol'* signifies both *dolor* and *morbus.* The etymology of the term for a healthy man, *s'drav',* demonstrates that the Slavs compared health with a hard, strong tree (*s' dervo*—vigorous tree). This concept is connected with the belief in the healing power of sacred trees and is related to certain ancient magical procedures during which the sick were placed along the cleft of a tree so as to acquire its health.

As far back as the oldest historical records go, the Slavs already lived in permanent settlements. Before the Great Migrations they had already acquired the arts of farming. Cattle-breeding was well developed (particularly pig-breeding and sheep-raising) and also poultry-raising, bee-rearing, fishing, and hunting. The basis of social life rested on house communities (*zadruga*) of a patriarchal character, organized in clans.

The Slavs dwelt in low-walled huts made of timber logs or twisted rods and clay. The housing standards in the Middle Ages were poor even in the most developed parts of Europe, and accordingly the sanitary conditions were very low in the dwellings of the rustic Slavic population. It is reported, however, that they whitewashed their rooms and used brooms. Latrines existed only in fortresses. For example, a wooden latrine was found among the remains of the Polish castle of Santok dating back to the eleventh century.

The system of house communities, which on the one hand led to unsatisfactory living conditions of a great number of people crowded together, on the other hand provided for permanent care

and nursing of the sick and helpless dependents. In the folklore there are hints of an old custom of killing the aged. Nevertheless, the majority of the ancient Slavs had respect for the aged; moreover they guaranteed them special privileges. Helmold (*Chron. Slav.*, II, 12) emphasizes that the Slavs took special care of the aged, infirm, and sick, who enjoyed good treatment.

Nursing the sick and helpless, like other domestic jobs, was the duty of the women. What was known of the therapeutic value of certain medicinal plants, of dietetics, and nursing procedures was transmitted from generation to generation of Slavic women. It is remarkable that the first person mentioned in Slavic history to practise healing and to know the secrets of medicinal plants was a woman, the legendary Czech Princess Kazi. The first known medical author of Slavic descent was also a Princess: Eupraxia Mstislavova, the daughter of the Russian ruler Mstislav Vladimirovich and, under the name of Zoë, the wife of the Byzantine Emperor Alexius Comnenus. She wrote about 1130 A.D. a medical treatise, of which a manuscript is in the Biblioteca Medicea—Laurenziana in Florence. It is written in Greek and in the main is a reflection of Galen's teaching, but it contains also some elements of the medical tradition of Slavic women. In legal and social matters women owed their obedience to men. They attended to domestic duties, were more burdened with work, and consequently lived under more unfavorable conditions than men. It is therefore easy to understand that according to the remains of nearly all ancient Slavic necropolises the average duration of a woman's life was considerably shorter than that of a man.

In prehistoric times promiscuity was common among the Slavs. Yet at the close of the pagan era matrimonial relations were regulated. Polygamy was prevalent. During conjugal life Slavic women were bound to absolute faithfulness, whereas prior to marriage they enjoyed full sexual liberty. From the point of view of eugenics, it is noteworthy that in spite of frequent incestuous marriages no negative effects were noted in the progeny.

Merrymaking accompanied with dancing and drinking was a psychological necessity to the ancient Slavs. Bacchanals of such a nature are, for example, described in the Chronicle of Kiev. Arabic travellers, beginning with Ahmed ibn Fadlān, observed heavy alcoholism among the northern Slavs. The principal alcoholic drinks were mead (*med'*) and beer (*pivo*), brewed from malt and hop. From the Scythians they gained knowledge of the preparation of koumiss and from the Germans and Latins that of wine.

The Slavic diet consisted of mixed food of vegetable and animal origin. The view that the Slavs were vegetarians until the tenth century, advanced by the historian J. Peisker, cannot be accepted. On the contrary, it appears that large quantities of meat and milk products were consumed. The principal cereals were millet, next to which corn, barley, and oats were cultivated. Arabic authors emphasize that the Slavs grew considerable quantities of fruit trees, particularly apples, to which a magical and aphrodisiac meaning was attributed. The most important domestic animal was the pig. The investigations of numerous remains of pig bones, to be found among the excavations, give evidence that those animals were chiefly killed at the age of 22 to 24 months. This fact leads to the conclusion that the Slavs were engaged in pig-rearing primarily for fat. Due to the weather conditions food was prepared with large additions of animal fat and melted butter.

It is worth noting that the Slavs had knowledge of various methods of food conservation. The cereals were kept in special underground barns. Meat and fish were salted or smoked, while milk was made into cheese. During the summer certain quantities of ice were kept in forest holes and used for preservation of food.

Clothing was appropriate to northern climate. It was made of skins, wool, linen, and hemp. Footgear consisted of a kind of mocassin.

Prokopios and other chroniclers state that the Slavs were dirty and did not care about personal hygiene. Although this may be true from the viewpoint of the Byzantine and Arabian noble, it is by no means sufficient proof that the Slavs were less careful of body cleanliness than other "barbaric" and a great portion of the "civilized" peoples. All Slavs, and particularly the eastern and western Slavs, enjoyed taking steam baths. Their wooden bath-houses (*laz'nja, ist'ba*) contained a fireplace or stove with big stones which were used for evaporation of water. Naked bathers were seated around, pouring warm water over one another and whipping their bodies with small brooms. The hot bath was concluded by a cold shower. Some plants containing saponins (*milnik,* i.e., Saponaria off. L.) were employed as cleansing agents from olden times, whereas soap was taken over from the Germans. The body was anointed with melted butter and animal fat. Combs, razors, and toilet scissors, even tweezers for removing reluctant hair (although of Roman origin) are found in Slavic tombs. Men shaved and wore long hair as short haircuts were considered to be a sign of slavery.

Archeological excavations at Novgorod offer evidence that there existed special pipes made of hollowed trees to supply larger settlements with water. The Slavs appreciated hot springs (*toplice*). It is reported, moreover, that even far in the north they bathed in the cold lakes and rivers of their homeland. Probably even newborn infants were plunged into cold water, as Soranos (*Gyn.*, 81) mentions the Scythians did and Galen (*De san. tuenda*, I, 10) the Germans and other barbaric peoples. Perhaps this practice was a kind of child selection. It is certain that abnormal and backward newborn infants, particularly female babies, were killed. Artificial deforming of infant skulls was a common custom among some Slavic tribes, especially in the territory of Moravia and in Russia.

The religion of the ancient Slavs was primitive polytheism with personification and worship of natural powers. All attempts to reconstruct the Slavic Olimp, the hierarchy of deities, have failed, probably due to the fact that elaborate religious systems began developing only after the Great Migrations. It is interesting that the Slavs had no deity with an outspoken medical function like Aesculapius. The chief deity (probably named *Perun*) was the lord of lightning and creator of all living beings. To cite Prokopios (*De bello Got.*, III, 14), the Slavs "whenever the danger of death threatens them, whether they are stricken by illness or go to battle, they pronounce a vow to offer a sacrifice, and thus if they remain alive they keep their vow and consider by that to have purchased their salvation." Vows to offer a sacrifice if the sick were healed were made both to the chief deity and to the god of sun *Svantovid*. Remains of a Slavic temple are to be seen, for example, near Arkona at Rügen. With the Baltic Slavs in such temples the priests (*zhreci*) offered sacrifices; it appears, however, that they were not engaged in medical practice. Sacred medicine of the ancient Slavs was only in its beginnings.

The oldest existing Slavic medical manuscripts date back only to the fourteenth and fifteenth centuries. Although these texts date from a considerably later period, they shed light on certain traditions of the pagan era. They are particularly precious sources for the study of old Slavic terms of diseases, remedies, and parts of the body.

Comparative Slavic philology gives insight into certain old concepts of human anatomy and physiology. The human organism consists of the body (*tjelo*) and the soul (*dusha*). In old Slavic physiology the "pneumatic" vitalistic conception is conspicuous, according to which the basis of life is the soul, which is not imma-

terial but the breath itself, pneuma. Man dies when his soul, his breath, departs from his body. *Izdahnuti* in Slavic languages signifies both to exhale and to die. *Dihanije* denotes "living being," although etymologically it is "that which breathes." The seat of the soul is the blood or some other organ: the heart, eyes, or spleen. Its main characteristic is heat, and this is why the ancient Slavs compared the soul not only with the breath, the wind, but also with fire, since it warmed the body. The bowels, most probably the stomach, seemed to have been considered the origin of body heat; hence the old term *zhivot,* originally denoting the bowels, and the stomach in particular, was later extended, and related to life itself.

The Slavs distinguished the hard, soft, and fluid parts of the human body. They had a good knowledge of the hard tissues, the bones (*kost'*). Their notion of the soft tissues, however, was not well differentiated. Thus the common name *mjaso* or *plot'* includes both muscles and other soft tissues. They made no distinction between arteries, veins, nerves, and aponeuroses; the Slavic word *zhila* denotes all these structures. The brain was regarded as the same substance as the bone marrow, whence the common term *mozg'* for brain and marrow. All regions of the trunk, the extremities and their parts, all main joints, and particularly the regions of the head possessed their individual, old names, which are common to all Slavic languages. Of the internal organs the Slavs had knowledge of the heart (*serdce*), lungs (*pljushcha*), stomach (*zheludok'* or *zhivot'*), intestines (*chrjevo*), liver (*jatro*), spleen (*slezena*), kidney (*bubreg'*), urinary bladder (*mjehir*), womb (*matka* or *maternica*), and testes (*monda*). The common name for the contents of the abdominal cavity is *utroba.* The term for heart denotes the middle of something. It points both to the central anatomical position of the heart and to the old concept that heart is the center of emotional life, e.g. of love and courage. Of the bodily juices the Slavs were aware of the blood (*kr'v'*), bile (*zhl'ch*), and different kinds of mucus (*glien', hrak',* and *soplja*). The principal excretions were known as well. The bile took its name because of its yellow colour. There is no indication as to the physiological role attributed to individual body juices. The blood was supposed to be the carrier of life energy and of hereditary characteristics.

Primitive man distinguished two types of ailments. Some are due to visible material causes, whereas others possess a magical pathogenesis. As rational agents of disease there were recognized mechanical injuries, deficient nutrition, poisoning, strong affects,

humoral disorders in the organism, and inheritance. Rational and magical significance was attributed to penetration of animals into the human organism, as well as to astronomical and meteorological factors of disease. The magical causes of sickness were believed to be demonic possession, inimical witchcraft, and punishment of offended deities.

With regard to food as a pathogenic factor it is interesting to quote Ibrāhīm ibn Ja'kūb that the Western Slavs abstain from chicken, which they consider to be harmful and to cause swellings. Therefore they give preference to beef and goose, which they find to be wholesome. Evidence for the view that the Slavs recognized certain important principles of dietetics is given by the Langobardic historian Paulus Diaconus. He relates (*Hist. Lang.*, IV, 37) that his ancestor Lopichis escaped from Avarian imprisonment about 620 A.D. and after long wanderings reached the land of the southern Slavs, where an old woman offered him refuge. At first the Slavic woman fed the famished deserter on small helpings which she gradually increased, telling him that he was not allowed to take larger quantities of food because they would make him sick.

The Slavs had a good notion of the effect of certain poisonous plants, such as Hyoscyamus niger L., Aconitum Napellus L., Veratrum album L., Atropa Belladonna L., and Conium maculatum L. The Slavic names of these plants explicitly speak of their poisonous effect; Hyoscyamus niger is called *blen'*, which means that it causes hallucinations and madness. Maurikios (*Strat.*, XII, 5) and Léon (*Tact.*, 18) record that the Slavs employed poisonous darts which were deadly if the wounded were not offered skilled medical help and if the wound was not cut off before the poison could spread throughout the body. The poison in use for darts was probably Aconitum Napellus L. or Veratrum album L. The Slavs of course were acquainted with snake venoms.

Great distress, fear, and other strong effects were, in the opinion of the Slavs, of great significance in the occurrence and development of certain maladies and could even be causes of death. The same importance was attributed to humoral disorders, in the first place to "rotten blood," i.e., to changes in the blood which may cause skin rash or "living wounds." Such "living wounds" are not due to visible external causes but are the result of internal troubles; they appear from themselves, without any external trauma. The Slavs were early aware of the inheritance of certain diseases, particularly of those of "rotten blood."

Great importance was attached to astral factors, notably to the moon and the Pleiades. They may inflict dangerous fevers, especially among children. Meteorological agents, such as winds, cold, river evaporation, etc., were made responsible as well.

There was a belief that animals could enter the human body and cause maladies. The Slavs had a correct notion of the existence and role of intestinal parasites. This recognition, by uncritical extension, resulted in the opinion that parasites could live in the teeth and certain organs. Angina, for example, was called *gushter* (lizard) or *zhaba* (frog).

The majority of internal diseases could not be explained by means of natural agents. Like all other peoples on the same level of civilization, the primitive Slavs believed in the magical pathogenesis of such diseases. Maladies were supposed to be individual beings, demons. Thus, for instance, Slavic peoples call pestilential diseases sister, godmother, etc. "Godmother plague" (*kuma kuga*) is a white woman bringing about epidemics. The Polish name for rheumatism is *gościec,* literally meaning guest. Also the word *macica* denotes at the same time an organ (uterus), a magic being or animal, and a special disease.

The evil spirit which entered the human body and took possession of man was usually called *bjes'* or *div'*. The term *bjes'* itself is characteristic, as it derived from the same etymological root as *bjesnilo,* denoting in most Slavic languages maniac conditions, great excitement, and rabies. The description from an old chronicle of how the Russian prince Svjatopluk fell ill in 1019 may best illustrate the belief of the ancient Slavs in theurgical pathogenesis. It reads as follows: "When fleeing Svjatopluk was possessed by bjes'. It weakened his bones so much that he could not ride any longer, and they had to carry him." Persecuted by the demon he asked to be moving all the time, since—as the chronicler puts it—he could not find peace in one place. Parenthetically it should be mentioned at this point that the Slavs, according to al-Mas'ūdī, transported the sick, especially those wounded in the wars, in the carts specially built to jolt them as little as possible. *Mora* is a fearful female demon which tortures people in sleep. Female demons which cause fevers are *boginje, nochnice,* and *trjesavice.* One of the prominent Slavic demons of disease is also *nezhit* (the word is composed of "not" and "living"), which enters man's head in order to suck his brain, crush his jaws, twist his neck, and crumble his teeth.

With regard to the belief in theurgical pathogenesis it is striking that the Slavic name for deity *bog* is found to be the root of various names of disease, e.g. *bogalj* (man without a hand or leg), *bozhec* (cramps), *boginje* (fever with skin rash), *bozhjast* (epilepsy), etc. It was thought that disease could be caused also by various magical procedures, the most important of which were spells (*uroki*) and witchcraft by means of figures.

For therapy it was of primary importance to find out whether in a given case a natural, magical, or theurgical disease was in question. Diagnosis was established on the basis of anamnesis, which showed whether some natural cause, e.g. trauma, had preceded disease, or whether the absence of visible causes, sudden onset or strong pain without visible objective changes in the organism pointed to magical pathogenesis. The Slavs recognized a series of basic symptoms, such as pain (*bol'*), cramp (*korch'*), cough (*kashel'*), vomiting (*blev'*), and others. The names of certain diseases are suggestive of their symptoms, e.g. *sverb'* (scabies) refers to itching, *grizha* (dysentery and rheumatism) to biting, *sushica* (consumption) to drying of the whole organism. It may be assumed in general that the Slavs did not make distinction between symptom and disease. To them headache, toothache, and jaundice were nosological units.

Usually—due to lack of knowledge—rational diagnostic methods were subject to failure, and therefore diagnosis had to be attempted by magical methods, by divination. Melted wax was cast into cold water and conclusions were drawn from the shape of the solid clods. Images seen in the ashes in the fireplace were objects of divination as well. The aim was to find out who or what was the cause of illness. Magical diagnosis is etiological in the broadest meaning of that term because its purpose is to state not only from what but by whom the patient suffers.

Natural, simple ailments were treated inside the family, where some member (particularly an elderly woman) was experienced in treatment and nursing. However, diagnosis and healing of diseases with a supposedly magical pathogenesis were left to specialists: tribal medicine men. *Vrachenje* in the Slavic languages today means both healing and exercise of magical rituals. In the activities of the tribal medicine men empiricism and magic were in close connection. Only after the conversion of the Slavs was differentiation between the medicine men and folk healer-empirics initiated.

Ancient Slavic medicine men made conjectures about diseases and cured them by pronouncing magical formulae (*bajanje*), fall-

ing into ecstasy, shaping graphic signs (*charanje*), using sympathetic magic, but also, on the other hand, by means of medicinal plants, hydrotherapy, surgical procedures, or psychotherapy. Notable data on the character of the tasks of medicine men are revealed by philological analysis of ancient terms. The most common Slavic names for tribal medicine men were: *vl'hv'* or *volhv', bali, vrach, charodej, vjeshtij, korenit'c', vjedun'* and *ljekar'*. The term *volhv'* is Indo-European, meaning by its etymology "the man who speaks in ecstasy." Akin to it is the old Finnish term *velho,* designating also medicine man, which points to the relationship between the ancient Slavic medicine man and Finnish and Turkish-Tataric shamanism, particularly in ecstatic divination. Under the influence of autosuggestion, narcotic drugs, and music, the Slavic volhv' fell into ecstasy predicting future events, establishing magic diagnosis and prognosis of the illness, and communicating with the demons. In the Greek texts from the tenth century the Slavic volhv' is translated by words that undoubtedly prove that he was equally engaged in divination, magic, healing, and preparation of drugs. *Vrach'* and *bali* etymologically mean "the man who speaks." These terms were applied to healers who cured through the suggestive and magical power of words. Certain ancient Slavic adjurations against disease and prayers to demons indicate a striking similarity to analogous medical formulae of the ancient Germans and Indians. *Charodej* is the man who performs magical rituals and heals through certain graphic signs, similar to the Germanic practice of foretelling by means of runes. The root *čar-* means charm, medicine, but also line or graphic sign. Even today in Slavic folklore it is a frequent practice to heal by means of written formulae, called *zapisi*. Also the widespread Slavic term for physician *ljekar'* or *lechec* dates back to olden times. It was taken over from the Goths who again had borrowed it from the Celts. These circumstances lead to the interesting fact that, for example, in so different languages as modern Swedish and Serbian the physician is given the same name: *lekar*. Also the English term *leech* is derived from that root. The Gothic *lekeis* healed by placing their hand on the sick individual and pronouncing spells. Probably the ancient Slavic ljekar' employed the same methods. Other terms for medicine men (e.g. *vjeshtij* or—among ancient Poles—*mądrz*) by their etymology mean "skilled, wise people."

Near the town of Rostunovo in Russia the tomb of an ancient Slavic medicine man has been found. It is probable that a tomb from the eighth century, at Bijelo Brdo near Osijek in Croatia,

also belongs to such a medicine man. Beside a male skeleton there were found a flute, some metallic implements, and remains of a leather bag with amulets. An experienced Slavic healer, *medicus Sclavianiscus,* is mentioned in a letter of the archbishop of Salzburg dating from the beginning of the ninth century. A legendary figure was Kazi, daughter of the Czech ruler Krok of the eighth century, of whom the Prague chronicler Kosmas (I, 4) states that *Medeae Colchicae herbis et carmine nec Paeonio magistro arte medicinali cessit.* One of her sisters, Teta, was informed about religious mysteries, and the other, Libusha, was a prophetess. All ancient Slavic terms for medicine men have also their feminine forms. From this it appears that women often took an active part in this office. After the conversion of the Slavs they became victims of merciless persecutions for keeping up pagan concepts.

In fact, the best data on ancient witchcraft are to be found in old church documents, where such activities were sharply condemned. As magical methods of healing are quoted the following: frightening of disease-demons by noise and music, exorcism of such demons, carving of their names in apples, bathing of the sick in certain lakes (e.g. the enchanted lake in the region of Radgoszcz), passing the patient through the cleft made in an oak-tree or a linden, burning of hair, witchcraft by means of human effigies made of dough, attaching amulets, fumigation of the sick, sucking out disease, wrapping the sick in a fresh hide of some animal, etc. The Slavic medicine men of both sexes also practised foretelling the future and preparing philters and abortive potions.

Magical procedures were employed not only for healing but even more as a means of preventing disease. Particularly impressive is the number of prophylactic magical methods related to pregnancy, delivery, marriage, and death. Thus, for instance, at the end of pregnancy the woman was forbidden to attend to domestic duties, to maintain sexual intercourse, to have contact with any stranger, to cross the house threshold, to eat certain kinds of food (e.g. rabbit flesh, so that the child might not be timid). During delivery an axe, knife, or needle were placed at the threshold or the resting-place. For reasons of sympathetic magic, all knots in the house had to be untied and all locks open.

It was considered that children were especially endangered by evil spirits, and therefore they were decked with amulets and called false names. Some magical conceptions have also a rational justification: ritual purity is for instance often identical with hygiene. According to an old Slavic custom for some time following child-

birth nobody was allowed to see the newborn infant or the mother, so as to prevent negative magical influences. In such a way, in fact, the mother and child were less exposed to infection, which is of particular importance after parturition.

In this connection a paragraph from a geographical treatise by Ahmed ibn Fadlān, referring to Russian merchants on the Volga in the tenth century, is worth quoting: "If one of them falls ill, they set up a separate tent, put the sick in it, and leave him with some bread and water. They no longer go to see the sick, nor do they talk to him, especially if he is poor or a slave. If he recovers, he goes back to his people, if he dies, they bury him or leave him to fall a prey to dogs and birds." This text is used by some historians of medicine as a proof that the ancient Slavs isolated their contagious patients on rational grounds. However, it appears that all these were in fact magical procedures, though with a certain empiric justification. Svjatoslav's *Izbornik* had already pointed out the necessity of isolating the sick from the healthy.

Women in delivery were attended by old *babice* (midwives), who besides performing various magic rites offered real aid. Thus, in the Chronicle of Kiev it is said that Vsheslav Bretislavich was born in 1044 with the assistance of old women who were warding off spirits, but also performing obstetrical procedures. The Chronicle records that Vsheslav wore traces of wounds on his head throughout his life.

Of considerable importance are the magical rites in connection with the deceased which were to secure him a happier life after death and to prevent his return among the living. It was believed that the dead could turn *vlkodlak'*, a half-demonic being that may cause illnesses by sucking human blood. It was common to bury either the untouched corpse or its remains after burning it down. During the pagan era burning of corpses was prevalent, particularly of illustrious people. Sometimes women had to follow their husbands into death. Ahmed ibn Fadlān gave in 922 a dramatic description of the Slavic custom of killing and burning of widows. At the burial of unmarried young men sometimes a girl was burned so as to offer him a wife in the other world. It is known from the reports of Arabic travellers (e.g. Shems ed-din Dimeshki) that the Eastern Slavs burned at the scaffold the corpses of their rulers and with them their wives, and frequently also the most important personages who had been in their service, in the first place the healer and the secretary. It is clear therefore that the royal leech took utmost care of the health of his patient. Killing of heal-

ers was not a punishment but a magical method to secure help to the ruler even in the other world.

The demons of disease were given pet names in order to conciliate them. They were cheated by citing false names of endangered persons, and warded off by means of spells and various amulets. The amulet was called *nauz'*, meaning "that which is bound." The most popular ones were the teeth of the bear, boar, and wolf, birds' bones, objects out of metal, glass, and amber, and roots of some plants. In old texts there is mention of "stinking ornaments," employed for prevention of disease. Most frequently the amulets were hung around the neck or the hand, threaded, or in a leather bag. In Slavic tombs from the ninth to the eleventh centuries there were found tin boxes for amulets, although they are not autochthonous products.

One type of medicine men was called *korenit'c'*, meaning "he who recognizes the roots of the plants." These healers had a really wide knowledge of the pharmacological effect of plants, although magic enveloped the empirical nucleus of their practice.

The general terms for plants, particularly for medicinal ones, were *zelje, bilje,* and *trava.* It is difficult to make distinction between the plants used for food, spices, or healing. However, already the etymology of certain ancient names points to the fact that the Slavs were familiar with some of their pharmacological properties. Thus, for instance, *glistnik'* (Tanacetum vulgare L.), the Slavic term derived from "worm," really has an effect on intestinal parasites; *kihavac* (Veratrum album L.) causes sneezing, as interpreted by its name; *rannik* (Plantago), derived from the term "wound," has a favorable effect on healing of wounds; and *goruha* (Sinapis arvensis L.), by its etymological root "that which burns," in fact burns and irritates mucosa. There were in use irritant plants such as *kopriva* (Urtica), bitter ones such as *pelin'* (Artemisia Absinthium L.) and *gorechavka* (Gentiana lutea L.), for it was maintained that by their unpleasant properties they warded off the disease-demons.

The most prominent magical plants among the ancient Slavs were *odolen'* (Valeriana off. L.), *oman'* and *devesil'* (Inula Helenium L., Inula squarrosa L. or Carlina acaulis L.), and *jasenec'* (Dictamnus alba L.). The Slavic name for valerian denotes that this plant resists negative magical influences. To cite a common Slavic proverb: "If there were no valerian, a mother would not bring up her son." Valerian and inula were thought to "appease the soul" and "gladden the heart." As sedatives *hmjel'* (Humulus

Lupulus L.) and *lapoch* (Nymphaea alba L.) were also used; as a soporific the juice of *mak* (Papaver somniferum L.); as narcotics *razhodnik* (Solanum Dulcamara L.), *blen'* (Hyoscyamus niger L.), and *konoplja* (Cannabis sativa L.). Hemp was also employed in many illnesses as a fumigant.

The sacred Slavic tree was *lipa* (Tilia); it played an important role in various magical procedures while its tea was considered to be a remedy against fever and catarrhal conditions. One of the most widely used home-made medicines with the same indication was the tea of *sljez'* (Althaea off. L. and Malva silvestris L.). Likewise the tea of *b'z'* (Sambucus nigra L.) was in common use as a diaphoretic in fevers. As agents against fever may be mentioned also *jasen'* (Cortex Fraxini), *bedrenec'* (Pimpinella saxifraga L.), *vr'ba* (Salix alba L.), and *chjubr* (Satureja hortensis L.). The Slavs had, as well, knowledge of some of the recognized anthelmintics, purgatives, vomitives, and tannin astringents.

Against epilepsy and cramps *gorocvet* (Adonis vernalis L.) and *kopitnik'* (Asarum Europaeum L.) were in usage. Some medicines and spices had the reputation of "purifying the blood" and of being therefore useful in preserving health, such as e.g. *chesn'k'* (Allium sativum L.), *koper'* (Anethum graveolens L.), *pelin'* (Artemisia Absinthium L.), *lopuh'* (Arctium Lappa) etc. In supposed maladies of the womb *matkina dushka* (Thymus Serpillum L.) was in use. It appears that the principle of signatures was known as well; thus the yellow juice of *rosopas* (Chelidonium maius L.) was used for jaundice.

The western Slavs cured wounds and fractures by means of local application of the rind of some tree, most probably that of oak. Apart from it the Slavs employed as external agents for wounds and skin diseases the leaves of *kupus'* (Brassica oleracea L.) and *brsh'ljan* (Hedera Helix L.), also compresses with *skorocel* (Achillea Millefolium L.), *prostrjel'* (Gentiana cruciata L.), *bukvica* (Betonica off. L.) *konkol'* (Agrosthemma Githago L.), and other plants.

The southern Slavs believed that for almost every ailment there was some specific medicinal plant and vice versa, and that every plant was endowed with medical properties at least for one disease. It was assumed, moreover, that there must be a plant, *trava od razgona,* that cures all maladies.

Slavic knowledge of medicinal plants supports the hypothesis of Tomaschek, Lattyak, and Bologa that the majority of the so-

called Dacic synonyms interpolated into the text of Dioscorides in the famous Viennese codex are of Slavic origin.

The Slavs employed drugs of animal and mineral origin, although considerably less extensively than those derived from plants. Of high importance was the use of animal fats for healing wounds and skin diseases. The Slavic term *mast* means both fat and ointment. Opotherapy, i.e., eating of various animal organs, such as deer brain and bear heart, was practised for magical reasons. Castoreum (*bobrovina*) was also known and applied. The Slavs did not object even to the therapeutic use of animal gall and excreta. For medical purposes honey, salt, and mineral and plant resins were frequently employed. Honey was used for catarrhal conditions, for "blood purification," for the preparation of mead, and for sweetening of food and medicines.

Bogojavlenskij has recently pointed out the efficacy of some ancient Russian methods of healing. For instance, the bark of the ash has proved useful against fever even in the light of modern medicine. Russian leeches gave the weakened sick the pulverized horn of the young deer which has recently proved to increase vigor owing to special hormones and calcium contained in it. It has also been proved that garlic contains phytoncides which have a favourable effect on suppurated wounds. Very often behind apparently magical methods we can find an empirical, rational therapy. Thus, in *Paterik Kievo-Pecherski* it is recorded that the Russian monk Alimpije healed skin diseases by spreading scrapings from sacred frescoes and icons on the skin. The patients thought it a magic procedure, but in fact the healing was due to the antimicrobic properties of some dyes.

The other rational therapeutic agents among the ancients Slavs were hydrotherapy, massage, bloodletting, and surgical procedures. Steam baths were not considered as prophylactic measures only. They were an important procedure in curing certain diseases. Massage had also a magical justification: it endeavoured to press the disease out of the body. In the same way attempts were made to suck out the malady.

In the folk medicine of the Slavic peoples some surgical procedures have persisted since neolithic times, e.g. adjustment of fractured and dislocated limbs, trephination of skull, suture by means of ant heads, and healing by "living fire." The bones in ancient Slavic tombs, as already mentioned, frequently exhibit traces of fractures and injuries. It is interesting to note that the fractures of diaphyses of the long bones are generally very well

healed, while fractures of the short bones and epiphyses of the long bones are usually poorly restored.

Among the ancient Russians the folk healer who practised surgery was called *kostoprav'*, which means "he who sets bones" or *rezalnik'*, which means "he who cuts." The surgical operation of tumor on the nucha, performed by such healers in 1076 on the Russian Prince Svjatoslav Jaroslavich, gives evidence that they had more than a passing empirical knowledge.

The ancient Slavs performed skull trephination. Thus, for instance, trephined skulls were found in the ancient Polish necropolises of Pruszcz (district of Gdansk) and Turowo (district of Plock). At Pruszcz three trephined skulls were found, two of which reveal clear cicatrization of the wound, whereas in the third the margin of the trephination opening has remained sharp. In one of these skulls there are marks of injury, most probably caused by an axe or sword. The injury healed with good results, wherefore it may be concluded that the patient had happily recovered both from the heavy trauma and the surgical operation. In the Russian territory the most interesting findings of trephined skulls are those from Knjazhaja Gora (Kanevski ujezd) and Belaja Vezha (Rostovskoj on the Don), where as early as 1893 a trephined skull was found dating between ninth to the twelfth centuries. The operation was performed with a sharp instrument in the region of the frontal bone. The patient did not survive the operation. The same happened to the two patients from the tenth or eleventh centuries whose trephined skulls were found at Belaja Vezha on the Don in 1949. On the basis of a detailed analysis of these skulls V. A. Goihman came to the conclusion that the trephination had been performed for the purpose of healing a trauma and that the choice of the places of trephination was excellent. In the territory of Czechoslovakia five trephined skulls of Slavic origin were found (two at Libice, one at Horný Jatov, one at Bešenov, and one at Moravany-Bošice). All these skulls are from the tenth to the eleventh centuries. The technique used was good. Out of five at least two patients seemed to have survived the operation. Other trephined skulls, found in the regions inhabited by the Slavs today, seem to be of prehistoric rather than proto-Slavic origin. If we summarize the results obtained so far by studying trephined skulls of Slavic origin, we may conclude that trephination in the Slavs was performed for no magical purposes but purely as a surgical means of healing skull injuries.

By the end of the pagan era the Slavs were well acquainted with working up of metals, primarily of iron, and therefore it is very likely that the surgeons employed metallic instruments. Among the remains in the tombs are frequently found iron and bronze knives, blades, scissors, flints, and pincers. There is no evidence of the existence of specific surgical instruments. Prosthesis was not unknown to the Slavs. Thus, for instance, the Polish duke Szelislaw had an artificial golden arm.

As early as the tenth century Ishāq ibn Hunain (in his work Ta'rīkh al-atibbā) wrote that Egyptians and Greeks were generally considered the discoverers and inventors of medicine, but that there were some who thought the Chaldeans, Persians, Indians, and even the Slavs were entitled to be called so. Almost the same words were used by the well-known historian of medicine Ibn Abī Usaibi'a in the thirteenth century. He writes: "Some say that its inventors were the Indians, whereas others prefer to maintain that they were Slavs." As a matter of fact, both authors quote a pseudo-Galenic comment on the Hippocratic Oath made at the time when the Slavs came on the historic scene.

Ancient Slavic medicine consisted of general Indo-European concepts and autochthonous Slavic empirical achievements and magical beliefs, enriched by the influences of the neighbouring Germans, Scythians, Finns, and Lithuanians, and slight indirect influence of the Graeco-Roman civilization. After the conversion of the Slavs, Christian theurgy followed by Galenic scientific and systematic medicine was gradually grafted on the Slavic primitive animistic arts of healing.

The first to come into closer contact with the Graeco-Roman civilization were the southern Slavs, who in the sixth century swept over the Balkan Peninsula. For the spread of new concepts among the southern Slavs the role of the Dalmatian towns is of particular importance. The older civilization survived there even after being encircled by Slavic invaders. Western European monastic medicine was introduced among the Croats, Czechs, and Poles by the Italian Benedictines, who in 852 arrived in Croatia on the invitation of Prince Trpimir, and in 1008 in Poland thanks to Prince Boleslav Chrobry. On the other hand, among the Russians, Serbs, and Bulgarians monastic medicine was instituted by Greek monks. This took place especially after the Russian Prince Vladimir had proclaimed Christianity the official religion in 988 and thereafter invited to Kiev priests, monks, and physicians from Byzantium. Under the influence of Christianity in the eleventh

century among all Slavic peoples monastic hospitals arose and there appeared miraculous healers, chiefly bishops and eremites, who cured by religious methods. For the reception of Byzantine culture, and particularly medicine, Russian and Serbian monasteries at Atos in Greece were important.

Physicians with scientific education arrived among the Slavs from Italy and Constantinople after the ninth century. The first Slavic scientifically trained physician to be known by name was the Pole Jan Smera, who in the second half of the tenth century studied medicine in Constantinople and Alexandria, and later on became an archiater at the court of Vladimir in Kiev. Among the Southern Slavs the first physician with a folk name was Prvoslav of Ragusa, mentioned in the documents of 1280.

Scholastic medicine was stabilized among the Slavs after the foundation of the universities of Prague (1348) and Krakow (1364). Scientific medicine, however, remained limited to urban populations and a small number of feudal nobles. In the villages, on the contrary, ancient beliefs and traditional arts of healing persisted for a very long time.

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The bibliography of Slavic archeology contains many items. The most important reviews of it are the following: L. Niederle, *Rukověť slovanske archeologie* (Symposium on Slavic Archeology), Prague, 1931; J. Korošec, *Uvod v materijalno kulturo Slovanov zgodnjega srednjega veka* (Introduction to the Material Culture of Early Mediaeval Slavs), Ljubljana, 1952; W. Hensel, *Słowiańszczyzna wczesnośredniowieczna* (Early Mediaeval Slavism), Ponań, 1952.

The literature on Slavic folklore is so comprehensive and varied that I find it impossible to give in these pages even a superficial review of it. As to medical folklore the most valuable books are K. Moszyński, *Kultura ludowa Słowian* (The Folklore of the Slavs), vol. II/1, Krakow, 1934, and O. Hovorka and A. Kronfeld, *Vergleichende Volksmedizin,* 2 vols., Stuttgart, 1908-1909.

Only a very limited number of studies have been devoted to ancient Slavic medicine so far. Thus, no comprehensive monograph on it has been published. There are, however, some good publications on certain particular problems. The famous Slavic philologue V. Jagić in giving a description of a mediaeval Serbian medical manuscript in the periodical *Starine,* vol. 10, 1878, has revealed also a few interesting data on Slavic medicine. B. Šulek has published a valuable study on Slavic plants in *Rad Jugoslavenske akademije,* vol. 39, 1877. The apothecary F. Minařik has written several articles on ancient Slavic medicine men and healers, medical plants, and amulets, published in the periodical *Farmacevtski vestnik,* vol. 2-5, 1951-1954. It is necessary to mention also V. J. Mansikka's *Die Religion der Ostslaven,* vol. I, Helsinki, 1922. Some data bearing on our subject are incorporated in various chapters on mediaeval medicine in Russia in the books of W. M. Richter, *Geschichte der Medizin in Russland,* vol. I, Moscow, 1813; and R. E. Kaveckij and K. P. Balickij, *U istokov otechestvennoi medicini* (The Beginnings of Native Medicine), Kiev, 1954. A very important work is the two-volume symposium *Istorija kulturi drevnei Rusi, Domongolski period* (Cultural History of Old Russia, Premongolic Period), Moscow, 1949-1951, edited by B. D. Grekov. Very useful also is *Istorija*

estestvoznanija v Rossii (History of Sciences in Russia), vol. I/1-2, Moscow, 1957, edited by N. A. Figurovskij. Interesting papers about Russian medicine in pagan times were also written by L. F. Zmejev, A. P. Levickij, D. N. Anuchin, M. J. Lachtin, and in recent years by D. M. Rossijskij and N. A. Bogojavlenskij. Data on ancient Polish medicine are given in the already mentioned work of J. Kostrzewski and in the books of L. Gąsiorowski, N. Bentkowski, J. Weigel, and W. Szumowski. Ancient Czech medicine is described by J. v. Hasner, J. Špott, A. Schrutz, and others. A synthetic outline of the ancient medicine of the southern Slavs is presented in my article "Pregled razvoja medicine u Hrvatskoj od pretpovijesnih vremena do XII. stoljeća" (A Review of the Historical Development of Medicine in Croatia from the Prehistoric Age to the Twelfth Century), published in the book *Iz hrvatske medicinske prošlosti* (From the Medical Past of Croatia), Zagreb, 1954. I must also refer to my paper on the sources for the history of ancient Croatian medicine, published in *Anali Historijskog instituta,* vol, 3, Ragusa, 1954. Data on ancient Bulgarian medicine are given in the book of C. Kristanov and J. Dujchev, *Estestvoznanieto v srednovekovna B'lgaria* (The Sciences in Mediaeval Bulgaria), Sofia, 1954.

Special studies of the pathological changes in the bones from ancient Slavic tombs have been carried out by J. Talko Hryncewicz, F. Ivaniček, B. Škerlj, V. Krušič, P. M. Pirpilashvili, A. Wrzosek, J. Nikolski, A. Lorencova, E. Vlček, V. A. Goihman, and others.

Of the old Greek and Latin works I can mention as the chief sources for the subject under discussion the writings of Maurikios, Prokopios, Jordanes, Léon, Theophylaktes, Helmold, Widukind, Pseudo-Caesarius, Paulus, Diaconus, and the Czech chronicler Kosmas. Valuable sources are also the works of the Arabian authors, primarily those of Ibrāhīm ibn Ja'kūb, al-Mas'ūdī, and Ahmed ibn Fadlān. The chief Slavic sources were the chronicles of Kiev, Svjatoslav's *Izbornik,* and *Shestodnev* of Johannes Exarchos, the tales of the Bulgarian priest Jeremija, and some old medical manuscripts and printed herbals.

The London Dispensary for the Sick-Poor

ALBERT ROSENBERG*

ON 20 November 1696, there was a meeting of the Committee on Medicines of the Royal College of Physicians. Five of the most eminent physicians in London served on this important committee: Charles Goodall, Physician to Charterhouse, known to his colleagues as a defender of the College against empirics and other unlicensed practitioners, and known to the public as the inventor of the popular nostrum "The Tincture of Peace"; John Bateman, Fellow of Merton College, Oxford, a former Censor and Registrar of the College; Thomas Gill, another former Censor and Registrar; Samuel Garth, the youngest member and recent Gulstonian Lecturer, known for his wit and his learning; Hans Sloane, Chairman of the group, protégé of Sydenham, Physician to Christ's Hospital, Secretary of the Royal Society, noted as a naturalist as well as a physician.[1]

The London Common Council had reminded the Committee of the pressing need for adequate medical services for the sick poor people of the London area. The pertinent law in force at this time, the Elizabethan Poor Law of 1601 (43 Elizabeth, Chapter 2), was administered by the parishes. Their authority for concerning themselves with the plight of the sick poor was the section ordering the parishes to provide "necessary relief of the lame, impotent, old, blind, and such other among them . . . not able to work." This obligation was met in various ways. Some parishes contracted with individual physicians to provide medical service for the poor. In the London area, where the parishes worked together through the Common Council, the main form of aid was payments to hospitals for treatment of charity patients. The problem in the metropolitan area was complicated by the fact that many of the inhabitants were not living in the parish of their birth and were therefore not eligible for aid.

The sick poor people born in any London parish who were ill enough to require hospitalization could receive free treatment at St. Bartholomew's, St. Thomas's, or Christ's Hospitals. There

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1 Royal College of Physicians MS. 274, *Minute Book for the use of the President, College, Treasurer, & several Committees of the same. Oct. 1689*, p. 42. I am indebted to the Registrar and the Librarian of the Royal College of Physicians for inestimable aid and for permission to quote from College manuscripts.

were two other chartered hospitals, but one, St. Mary's Bethlem, was reserved for lunatics and the other, Bridwell, was essentially a workhouse. However, there were no adequate provisions for the many poor people who became ill but did not require hospital care. Those just above actual poverty usually relied on the apothecaries, who did not charge for medical advice and who sold their drugs on liberal credit terms, presenting their yearly bills on Christmas Day. Still the majority of the sick poor people were unattended or were the prey of the many quacks who lived off the credulity of the people. A vivid picture of the types of illegal practitioners who infested London was drawn by Dr. Samuel Garth in an oration before his colleagues:

> But at present . . . Medicine itself is sick. This Art, of all others the most useful, knows not how to help itself; while rather from mock Physicians, than diseases, this country suffers. What, and what sort of people they are, the rubrick'd walls at the corner of every street will inform you. Here an operator, mounted on his pyed horse, draws teeth in the streets; another is so obliging, as to be at home at certain hours to receive fools; another pores in urinals, and if he finds no disease there, he makes it; another still, draws together a crowd by the help of rope-dancing; he comes, he sees, then rushes forth upon the multitude and murders without mercy. Yet not with weapons do these swarms of mountebanks inflict wounds, but with some nostrum more dangerous than any weapon.[2]

The quacks usually practised without restraint, although the law held that anyone not licensed to practise medicine who undertakes to cure a person is guilty of a felony if his patient dies.

There is no reliable estimate of the number of poor people in London near the close of the seventeenth century. However, in the country as a whole it has been estimated that approximately one person out of five had a total yearly income of less than seven pounds. This means that on a comparable basis, the population of London (about 700,000 at this time) contained about 145,000 people who were certainly unable to pay for medical care.[3]

Naturally, those directly concerned—London Common Council, the Royal College of Physicians, and the Society of Apothecaries—sought a practical solution to the problem of caring for the sick poor; but, in addition, a number of individuals published pro-

[2] Samuel Garth, *Oratio laudatoria* (1697), p. 3.

[3] G. N. Clark, *The later Stuarts 1660-1714* (Oxford, 1934), p. 25. The statistical table presented by Clark is based on contemporary surveys by Gregory King and Charles Davenant. Since not much is known concerning the fees charged by physicians at this time, the following information is especially valuable: "The usual Fee of a Doctor in ancient times was 20 *s.* and one that had not taken that Degree, 10 *s.* But now there is no certain Rule, but some that are Eminent have received in Fees Yearly 2000 or 3000 £." Thomas De Laune, *Angliae metropolis: or the present state of London* (1690), p. 156.

posals aimed at alleviating the deplorable conditions. In 1667, for example, "A true lover of his country" suggested the establishing of a hospital for foundlings and for poor pregnant women. Moreover, he advocated direct payments to physicians, surgeons, and apothecaries to provide free advice and medicines to all sick or wounded people "allowed in *forma pauperis* to require their assistance." This charity was to be administered by commissioners named by Parliament, and the funds were to be raised by an import duty on "all such Commodities as occasion either Excess or Luxury, Wantonness, Idleness, Pride, or Corruption of Manners."[4]

Later in the century (*c.* 1689) Hugh Chamberlen (often referred to as the "man-midwife") proposed a broad scheme of medical care that was not limited to the poor. All sick people were to receive complete medical attention, including necessary medicines. Only in cases of the pox (syphilis), midwifery, and cutting for the stone were fees to be levied. Chamberlen's reasons for these charges are noteworthy: "Because the Pox may not be hereby encouraged, and Deliveries require mighty Pains, and unseasonable hours; and [cutting for] the Stone is not only a particular Dexterity, but requires much Attendance." The medical services were to be financed by a "small yearly sum" assessed upon each house, except charity cases. All residents of the houses were included. Even visitors to London would receive free medical care, and Chamberlen thought this would bring a desirable increase in tourists. To provide the services required seven hospitals were to be built in London to be staffed by 164 physicians, 121 surgeons, and 149 apothecaries. Administration of the entire plan would be the responsibility of "ten noble curatores."[5]

Certainly the problem the Committee of Physicians faced in 1696 was neither new nor simple. As early as 1675 a plan had been presented for a dispensary where the physicians would provide free medical advice for the sick poor. On 24 August 1675, Mr. Hinton, Master of the Society of Apothecaries, read to his colleagues a document from the Royal College of Physicians:

> The President-elect, Censors and Commonalty of the King's College of Physicians do give notice that besides every collegiate cheerful readyness to advise and prescribe for such of the poore who shall apply themselves to them at their several respective habitations. We also have constituted and appointed two of our number, or more if occasion shall require, who shall

[4] *Englands wants: or several proposals probably beneficial for England* (1667), pp. 4-8. A valuable survey of the problem of medical care during this period is to be found in an article by Dr. George Rosen in *Bull. N. Y. Acad. Med.* (May, 1953).

[5] [Hugh Chamberlen], *A proposal for the better securing of health. Humbly offered to the consideration of the honourable House of Parliament* [1689], pp. 1-2.

from ten o'clock till twelve successively attend at our said College all such poor who shall bring certificates with them from either any of the Aldermen, Deputies, Common Council men, Churchwardens, or Overseers for the Poor that they are fitt objects of charity, to direct for and take care of them gratis in their several maladys and distempers. Not doubting but that the Company of the Apothecaries will suitably comply with our just and real intention and designe of serving the public in affording medicines prescribed by us to such poor at rates answerable to the lowness of their condition.[6]

The Physicians also requested information concerning the provision of medicines for the poor; and if proper steps had not been taken, they suggested a meeting for this purpose. A squabble ensued. The apothecaries complained of a lack of formality in the documents, which were not signed by the President-elect and the Censors. The physicians replied that such documents were not ordinarily signed since they were merely copies made by the beadle of official documents. Unfortunately, subsequent events are clouded, but the author of the history of the Apothecaries Society declares that the apothecaries agreed to make up prescriptions for the poor at very low rates.[7]

The failure to reach a working agreement in 1675 can be explained in part by the bitter feelings remaining from a controversy ignited some five years earlier by the fiery polemics discharged against the apothecaries by four eminent doctors—Cox, Merret, Goddard, and Maynwaring. Along with some anonymous allies, these doctors coupled an excoriating attack on the malpractices of the apothecaries with a plea that the physicians prepare their own medicines. Dr. Everard Maynwaring, for example, indicted the apothecaries on the following charges: (i) they were incompetent; (ii) they charged too high prices; (iii) they usurped the physician's role by prescribing medicines; (iv) they slandered physicians by calling them in on helpless cases and then blaming them if the patient died; and (v) they recommended only those physicians who prescribed many expensive medicines.[8]

These charges, infuriating as they must have been, were not as calamitous to the apothecaries as the suggestion that physicians prepare their own medicines. Maynwaring argued that the ancient physicians filled their own prescriptions and that a return to the

[6] C. R. B. Barrett, *The history of the Society of Apothecaries of London* (London, 1905), p. 94.

[7] Barrett, p. 95.

[8] Everard Maynwaring, *Praxis medicorum antiqua & nova: the ancient and modern practice of physick examined, stated, and compared* (1671), pp. 28-29, 68-71, 48-49, and 76-78.

earlier practice would benefit the patients, the physicians, and the art of medicine. He contended:

> That Pharmacy or the dextrous preparation of Medicines, is the most excellent and necessary part of Physick; and the main stress of curing, lies chiefly in the compleat medicinal apparatus.
>
> That true skill in Pharmacy, and a certain knowledge of Medicines, is not gained by reading, but by manual preparations and tryals; personally observing through the whole process of the Medicine, and noting all the circumstances appertaining to it, or casually emerging; whether successful or not; for a future guide, to direct and improve the next process, for the same Medicines; or to admonish, instruct, or caution in another, affine or analogous thereto.
>
> That the preparation of Medicines is the proper and special business of every Physician; without which experience and certain knowledge in Medicines, he cannot be compleat in his Profession, but very insufficient in the grand and most weighty part of the Medical Science.[9]

This attempt of some physicians to convince their colleagues to prepare their own medicines was a serious attack on the apothecaries' prerogatives. Moreover, it was not merely a pen and ink battle, for the College of Physicians had voted that it was honourable for a physician to make his own medicines. The apothecaries realized that if they were no longer called upon to fill the physicians' prescriptions, they would be reduced to keeping shops.

Naturally, the apothecaries violently objected to the charges made against them. They were especially enraged by Dr. Merrett, whose *A Short View of the Frauds and Abuses committed by the Apothecaries, and of the only Remedy therof by Physicians making their own Medicines* was read at a meeting of the Society on 22 February 1670.[10] After the expected flurry of invective subsided, the members of the Society considered retaliatory action. They decided to send a message to the Royal College of Physicians objecting strongly to the scandalous books written by members of that

[9] Maynwaring, pp. 8-9. Dr. Merrett even suggested: "But those Physicians that for reasons cannot, nor will not take this course, are to be admonish'd to doe here as Physicians did in *France*, for the good of the people, viz. to tell the Patients the prices of their Medicines, and to write their Bills in *English*." Quoted in Maynwaring, p. 38.

[10] Barrett, pp. 82-83. Merrett continued his assault on the apothecaries in *The accomplisht physician, the honest apothecary, and the skillfull chyrurgeon, detecting their necessary connexion, and dependance on each other. Withall discovery of the frauds of the quacking empirick, the prescribing surgeon, and the practicing apothecary* (London, 1670), and in *Self-conviction; or an enumeration of the absurdities, railings against the College, and Physicians in general; (but more especially, the writers against the apothecaries) nonsence, irrational conclusions, falsities in matters of fact and in quotations concessions, etc. of a nameless person. And also, an answer to the rest of lex talionis* (London, 1670). Dr. Johnathan Goddard's main contribution to the attack on the apothecaries was *A discourse setting forth the unhappy condition of the practice of physick in London, and offering some means to put it in.to a better; for the interest of patients, no less, or rather much more than of physicians* (London, 1670). For a good survey of this controversy see: Charles F. Mullett, "Physician vs. apothecary, 1669-1671. An episode in an age-long controversey," *Sci. Monthly*, Dec. 1939, *49*, 558-565.

body against the apothecaries and inquiring if the College would disavow these books. The reply from the Royal College of Physicians stated that since the persons who wrote the books put their names to them, it was not fit for the Apothecaries to question the College in this matter. More communications were of no avail. Eventually a meeting between four physicians and four apothecaries was arranged, but there is no information concerning the outcome of this meeting.[11] In any event, the ill feeling generated by this controversy continued for many years and made it exceedingly difficult for the apothecaries and physicians to co-operate in any scheme to help the sick poor people of London.

In 1687 the Royal College of Physicians made another attempt to help the sick poor; a unanimous vote of the College declared "that all Members of the College, whether Fellows, Candidates, or Licentiates, shou'd give their advice gratis to all their sick neighbouring poor, when desir'd, within the city of London, or seven miles around."[12] News of this magnanimous offer was communicated to the various wards by the Court of Aldermen. However, the failure to provide definite hours and specific places where medical advice could be obtained was a crippling weakness in this plan. Moreover, the free advice of physicians meant little to people too poor to buy any medicines prescribed.

A group of physicians, disappointed by the failure of the 1687 scheme, conferred with the apothecaries and proposed that the poor people be supplied with medicines at a moderate rate, which would be set by agreement between the physicians and the apothecaries. This proposal was rejected by the apothecaries as interfering with their right to set their own charges. A minority group of the apothecaries subscribed to a plan for furnishing the poor with medicines at rates thought reasonable by the physicians, but they were forced by their colleagues to retract their pledge.[13] In a final hope of reaching a compromise a group of physicians and apothecaries met with a Committee of the Aldermen and Councilmen. The physicians, after repeating their offer to treat needy persons gratis, noted that providence liberally bestows the most effective medicines and that these are sold at the apothecary shops with very reasonable profit. They then proposed that the exact price of each drug be marked on a slip of paper, so that the remedy prescribed at the patient's bedside might not grow to ten or twenty times as

11 Barrett, pp. 83-84.

12 *A brief account of the dispensary, erected at the College of Physicians in Warwick-lane London, for the relief of the sick-poor,* p. 1.

13 *Ibid.* See also *The present state of physick and surgery in London* (1701), p. 5.

expensive because of the mixing of two or three inexpensive medicines.[14]

The apothecaries then presented three questions to the physicians. First, who was to determine the people deserving of charity? Second, who should select the apothecaries to fill the prescriptions in the various parishes of the city? Third, how should the prices of medicines be set? The physicians' answers to the first two questions were satisfactory to the apothecaries. The ministers, churchwardens, and overseers of the poor were to select the fit objects of charity; and the parish authorities were to appoint an apothecary who was a freeman of the Company. However, the physicians' reply to the third question was not acceptable to the apothecaries. The physicians proposed that "Every man in his own way is best able to make out his own bill." They further suggested that the Master and Wardens of the Society of Apothecaries arbitrate disputes concerning excessive charges. The apothecaries apparently felt that this procedure would expose them to continual accusations of overcharging. Instead, they offered "to sell the poore their medicines when Prescribed by a Phisitian at their intrinsick value." To this proposal they injudiciously added an offer to treat gratis any sick person when summoned by a parish official in the absence of a physician. Their kindly intention of "administering such remedies as may be necessary" could hardly fail to enrage the physicians, who certainly interpreted it as a clever scheme to establish a precedent for practising medicine.[15] The meeting ended with no agreement being reached.

Not long after this fruitless conference, relations between the apothecaries and the physicians further deteriorated because of bitter words spoken at a hearing on the Apothecaries Bill, then before Parliament. The council for the apothecaries characterized the physicians as "negligent, careless, and uncharitable." On the other hand, he described the apothecaries as men of great knowledge and skill who were often forced to correct errors in the physicians' bills [prescriptions]. Moreover, he credited the apothecaries with the sole care of the poor, accusing the doctors of not attending the poor without fees and of neglecting even rich patients when summoned at an inconvenient time. Obviously these sentiments were offensive to the physicians, who were further infuriated by the attempt, which proved unsuccessful, to attach to

[14] Robert Pitt, *The craft and frauds of physick expos'd*, 2d ed. (1703), p. 20.

[15] Guildhall Library, London, MS 8200, *Society of Apothecaries Court Minutes Book*, vol. 4, f. 17-18. I am indebted to the Society of Apothecaries for permission to examine and quote pertinent records of their organization.

the Apothecaries' Bill a rider which would have "empowered them to have practiced on the poor and in cases of necessity." The physicians retaliated by reviving the order of 1687, and a committee was formed to implement this order.[16]

It was at a meeting of this committee on 20 November 1696, that the members, spurred on by a request of the London Common Council, took a radical step. They presented a plan to the College which called for furnishing medicine to the poor at its intrinsic cost. Dr. Sloane submitted for adoption the plan, along with the enabling subscription:

> We whose Names are underwritten, doe agree and promise that towards the furnishing a Repository of Medicines, out of wch the poor shall be supplied with them at ye Intrinsick Value, we will contribute ten pounds apiece, to be paid by such proportions as shall seem most convenient to the Subscribers.[17]

This plan, which bypassed the apothecaries, was approved by a close vote of the College; thirty-two members of the group voted for it and an almost equal number voted against it, including two Elects, Lawson and Clark, and eminent doctors like Tyson, Bernard, Gibbons, Cole, Blackmore, and the eccentric but fantastically successful Radcliffe.

The subscription for the establishment of a dispensary was followed by another blow aimed at the pride and purse of the apothecaries. On 6 December 1696, the College passed and sent to the Society of Apothecaries the following declaration.

> In future, no fellow or member of the College of Physicians shall write a direction for the use of the medicines by him prescribed, in the Latin 'bills' that are to be sent to the Apothecary, except such 'bills' as shall be prescribed for the Royal Family and except such 'bills' as shall be prescribed for the hospitals. But shall order only the medicines so prescribed to be marked with such titles as he shall think convenient to distinguish them, and shall leave direction for the use of them in English with the patient, or take care to send them sealed up to his dwelling or place of abode or residence. Nor shall any of them by any way hinder or forbid any Apothecary to show or deliver his 'physical prescriptions' or 'bills' to the Censors when required, and that every fellow or other member offending herein shall for every offence forfeit or pay 20s. to the Treasurer of the said College. And every fellow or other member offending herein three times over and above, the said fellow shall incur and suffer such incapacity and disabilities as are by the laws and statutes appointed by them to be executed in their admission, in such manner and form as is therein for the purpose particularly expressed. And further that no fellow or other member of the College shall hold any correspondence familiarly with such person or persons as shall be declared by the Presidents or Censors in the public meeting to have wilfully

[16] Royal College of Physicians, *Annals,* vol. VI, pp. 194-196.
[17] Royal College of Physicians, *Minute Book,* p. 42.

endeavoured to break or 'inviolate' the honour, privilege or rules of the College or Commonalty given or established by the laws of the Kingdom or by the private Statutes or by the laws of the College. Nor shall any fellow or member of the College prescribe or let his 'physical bill' be sent to any Apothecary whom the President after having, together with the Censors, examined the matter shall in the public meetings declare to have privately undervalued any of the same fellows or members of the College before any person so as by that means to hinder any of them from being called to any patient, or by sly insinuation to have caused any of them to have been dismissed in order to call another of their own recommendation.[18]

This declaration would lead to a decline in the influence of the apothecary, reducing his role to the filling of prescriptions. It also would provide a means of boycotting apothecaries who incurred the displeasure of the College of Physicians. The physicians opposed to the dispensary plan objected strongly. They petitioned the Lord Chancellor, the Lord Chief Justice of the King's Bench, the Chief Justice of the Common Pleas, and the Chief Baron of the Exchequer to hear their complaints against the "illegal" by-laws of the College. These judges, however, ruled they had no jurisdiction in this dispute; the plans for a dispensary were becoming reality.[19]

The bitter dispute within the College continued. The physicians who opposed the design of selling medicines to the poor at cost price were accused of currying favor with the apothecaries. The Committee on Medicines drew up an official statement concerning the need for a dispensary. On 22 December 1696 this was signed by 53 members of the College; the opposition to the charitable scheme was weakening. Another blow for the dispensary was struck by Samuel Garth in the Harveian Oration he gave on 17 September 1697 in which he eloquently presented the desperate plight of the sick poor people of London.[20] The members of the College favoring the dispensary now felt their position was strong enough to warrant decisive action. A laboratory and two other rooms in the College were prepared for use as a dispensary. In the London *Post-Boy* of 14-16 April the following notice was inserted:

[18] Quoted in Barrett, p. 115.

[19] Royal College of Physicians, *Annals*, 26 Jan. 1696/97.

[20] Quoted earlier in this article. Garth's mock-heroic poem *The dispensary*, motivated by the controversy, was published in May 1699. It was a great success; three additional editions were called for within a year. However, Garth certainly failed in his attempt, stated in the preface, to "Railly some of our disaffected Members with a Sense of their Duty." The main attack on Garth's *Dispensary* was led by one of the "disaffected Members," Sir Richard Blackmore, whose trenchant *A satyr against wit*, was published in November 1699. A full treatment of the literary aspects of the Dispensary controversy is beyond the limits of this article. For further information see my *Sir Richard Blackmore: a poet and physician of the Augustan age* (Lincoln, Nebr., 1953). The best source of information on Garth is Dr. Harvey Cushing's *Dr. Garth, the Kit-Kat poet* (Baltimore, 1906).

> The members of the College of Physicians have collected (by way of a Charitable Subscription) a Joynt-stock of about 500 l. to prepare at the said College all sorts of Medicines for the Poor, and to give them at the intrinsick Vallue, that is, for what they only cost, which will save the Poor 15 s. in the Pound; the Physicians have likewise obligated themselves voluntarily, under a forfeiture, to attend the College in turns, to give Advice to all People that will come thither for nothing, every Wednesday and Saturday in the Afternoon, all the year.

Handbills to the same effect were distributed.

Details of the operation of the Dispensary are given in a pamphlet written just two months after it opened. Dr. Harrel, an expert chemist, is credited with showing his zeal for the charitable scheme by building several furnaces and stills "where all sorts of Medicines both Chymical and Galenical are prepared of the best drugs, and with all the exactness imaginable." In constant attendance were an apothecary, a chemist, and other servants, who resided on the premises. The subscribers to the scheme held quarterly meetings, and twelve members were selected as a committee to regulate the affairs and audit the accounts. Two members of this committee served as curators, checking daily on the supply, preparation, and dispensing of medicines. Furthermore, it was stipulated that neither the apothecary nor chemist were to issue any medicines without a bill from a doctor. In cases where poor people received treatment at places other than the Dispensary the following procedure was employed: "The Doctor Signs the Bill, and puts the price at the bottom of it, that the Servants should not cheat the poor, nor rob the College; for they are responsible to the *Curators* for the price writ upon every Bill."[21]

A bitter battle raged between the forces of the apothecaries and the physicians who favored the Dispensary. Naturally, the apothecaries favored those physicians who opposed the Dispensary. Indeed, they were reported to have a list of these physicians in their Hall for the convenience of their members. It was important for a physician to be in the good graces of the apothecaries since most families confronted with an illness first consulted an apothecary, who would, if he thought the case was beyond his ability, recommend a particular physician.[22]

Although the Dispensary was praised in most of the books and pamphlets it occasioned, it was the target of some vigorous attacks. Perhaps the most cogent presentation of the opposition's case is

21 *The state of physick in London* (1698), pp. 15-19.

22 ". . . all the Families are under the Direction of their Apothevary, who gives his Physick, till he fears the Patient will die, and then appoints a Physician, prepared to acquit him, by bearing the Reproach with the most perfect Resignation." Pitt, p. 15.

made in *The Censor Censur'd: or The Antidote Examin'd: Wherein the designs of Dr. Pitt and the Dispensary Physicians are detected.* (1704) The first charge was that the physicians were interested primarily in financial gain. They were accused of insisting on a five shilling in the pound allowance for all prescriptions from the apothecary shops. Moreover, although in the Dispensary they sold some common medicines cheaper than the apothecaries, in acute diseases they prescribed nostrums of great cost, such as bezoardic extract at 40 shillings an ounce, with two or three ounces being used in breaking a fever.[23]

It was also argued that the education physicians received did not prepare them adequately either to prescribe or fill prescriptions. At the universities they were likely to become "rakes or voluptuaries." Furthermore, their studies were theoretical and impractical; precious time was wasted in solving "the doubtful and crabbed Problems of the Schools." In direct contrast was the education of the apothecaries:

> . . . the knowledge which the Apothecary Searches after in his Experiments, is not imaginary but real; it do's not carry him off, but brings him nearer to Practice: While the knowledge which the young Physician is cultivating at the University, is founded on Thoughts and Words, and seldom has any other tendency than to encrease and multiply more thoughts and words: But that which is founded on Experiments desires to discover it self by Works, and to make it useful by the Clearness and Certainty of its Operations.[24]

Since the apothecaries were so eminently qualified to practise medicine, it was surprising that they generally restrained themselves, ". . . except where they had been call'd in, when the Physician had refus'd to go without his Fee, and where thousands of people must in all probability have perish'd but for them."[25]

Another charge made against the Dispensary physicians was that the very medicines they railed against were stocked by the Dispensary. A prescription signed by two Dispensary physicians, Dr. Gill and Dr. Bateman, was quoted, which included beozar, pearl, crab's eyes and other drugs attacked by the staunch defender of the Dispensary, Dr. Pitt.[26]

[23] *The censor censur'd: or the antidote examin'd: wherein the designs of Dr. Pitt and the Dispensary Physicians are detected* (London, 1704), pp. 9-11. For another defence of the apothecaries see *Lex talionis; sive vindiciae pharmacoporum: or a short reply to Dr Merrett's book; and others, written against the apothecaries: wherein may be discovered the frauds and abuses committed by doctors professing and practising pharmacy* (London, 1670).

[24] *The censor censur'd,* pp. 69-71.

[25] *Ibid.,* p. 27.

[26] *Ibid.,* pp. 28-29.

The apothecaries were defended as charging low prices to the poor and allowing them considerable time for payment; whereas the Dispensary physicians demanded "ready money." A specific, but unsubstantiated, example was mentioned.

> . . . A *Dispensary Physician* who was apply'd to for Advice and Medicines by a poor Family, being informed they had no Money to give him, he enquired after what Moveables they had, and compelled the poor Creatures to Pawn their Pewter Dishes to raise Money for him, before he would prescribe or make them any Medicines.[27]

The avariciousness of the physicians was attributed to their prodigious increase. It was estimated that there were at least 800 doctors in the London area.[28]

Still another charge levelled against the Dispensary physicians was that they sought to supply medicines for the entire Army.[29] However, the main attack was on the nostrums, favorite medicines of some of the physicians. They were said to be so high priced that the poor could not even afford them at cost price. Indeed, a squabble over the nostrums was declared to be the basic cause of the Dispensary controversy. It was maintained that the nostrums concocted by physicians such as Charles Goodall, Thomas Burwell, and Richard Morton were sold by one specially selected apothecary. The prices for these secret medicines were so high that the apothecary acquired a bad reputation. Therefore, he ceased to sell them, and his decision so enraged the physicians concerned that they sought revenge by declaring it necessary to set up a dispensary, using as a pretext the claim that the apothecaries were practising medicine and were charging excessive prices for drugs.[30]

The charges made in *The Censor Censur'd* were refuted by defenders of the Dispensary. They declared that no profit had been made by the Dispensary and no dividend paid and that no one had been repaid a penny of his subscription money. Furthermore, they maintained that bezoardic extract was neither kept, sold, nor prescribed in the Dispensary.[31] As an example of the difference in charges between apothecaries and the Dispensary the case of John Seal was cited. John Seal, a London butcher, being sick, consulted William Rose, an apothecary. For about a year Rose advised Seal and prepared medicines for him. Seal was dissatisfied, feeling that

27 *Ibid.*, pp. 45-46.
28 *Ibid.*, pp. 98-99.
29 *Ibid.*, p. 102.
30 *Ibid.*, pp. 23-27.
31 *A short account of divers falsehoods contained in a pamphlet lately publish'd, entituled, the Censor censur'd, &c.* (n.d.), p. 32.

he was in a worse condition than when he started going to the apothecary. He was also nearly fifty pounds poorer. He then went to the Dispensary and in six weeks time, for a sum of under forty shillings in medicines, he was cured.[32]

The charge that the apothecaries were better prepared for the practice of medicine than the physicians was answered in various ways. The apothecaries were reminded that they had only to pass the tests set by law to be allowed to practise medicine legally and that these tests should not be difficult for men possessing superior educations.[33] The author of *The Censor Censur'd* was requested to provide proof of the superiority of the education received by apothecaries: "It had been happy for him, if to back this Assertion, he could have instanced in any useful Work publish'd, or Discovery made by an Apothecary, by which we might have judg'd of their Progress in Learning, or the Success of their Experiments."[34] One author was so enraged by the pretensions of the apothecaries that he exclaimed: ". . . to make every little Fellow, that can build a furnace, burn some thing in it until it stinks, and then Christen it by the name of a great Medicine, a Physician; is but to dub the labourer in the brick-kilns, an Architect; or the maker of bellows an Organist."[35]

Scant attention was paid to the accusation that in the Dispensary were prepared medicines specifically attacked by Dr. Pitt, a leading advocate of the charitable institution. It was made clear that Dr. Pitt spoke only for himself. Physicians varied, and even "Pearl and Bezoar, and divers other Medicines not generally us'd, are kept in the Dispensary, for the service of those that still have an opinion of them."[36]

[32] *Ibid.*, p. 33. William Rose was accused by the Royal College of Physicians of practising medicine illegally, and a judgment against him was obtained in the Queen's Bench. For a time his cause was taken up by the apothecaries, but when public sentiment crystallized against Rose, they disavowed him.

[33] *A short answer to a late book, entituled, Tentamen medicinale* (London, 1705), p. 34.

[34] *A short account*, p. 34.

[35] British Museum call no. 550 b. 10. Letter beginning, "Sir I Doe assure you . . . " p. 14.

[36] *A short account*, p. 33. Robert Pitt (1643-1713), Physician to St. Bartholomew's Hospital and formerly a teacher of anatomy at Oxford, enlisted in the Dispensarian forces largely because of his desire to reform the practice of medicine. His main contentions are revealed in the title of his most successful book: *The craft and frauds of physick expos'd. The very low prices of the best medicines discover'd. The costly medicines, now in greatest esteem, such as beozar, pearl, &c. As also the distill'd waters, censur'd. And the too frequent use of physick prov'd destructive to health. With instructions to prevent being cheated and destroy'd by the prevailing practice. The second edition, improv'd. And augmented with an alphabetical index of all the simples and compounds now in use, referring to the page where their virtues and prices are set down* (London, 1703).

To the charge that Dispensary physicians demanded cash payments from poor people before treating them, no answer was deemed necessary since no specific physicians had been named. The claim that there were over eight hundred physicians in London was countered by an official list from the Royal College of Physicians of their fellows, candidates, honorary fellows, and licentiates, which numbered 104.[37]

Next the allegation that the Dispensarian physicians sought to supply medicines for the entire Army was considered, and the following account was offered as an explanation. The Earl of Peterborough was cured of a vomiting of blood by a Dispensary physician, with medicines at inexpensive rates from the Dispensary. When he became Governor of Jamaica and Captain General of the West Indies, the Earl procured the medicines necessary for an expedition to his new command from the Dispensary. They were sold at cost price. When the expedition was cancelled, the medicines ordered were offered for the use of the Army and the Navy. However, when the Apothecaries, resenting this encroachment on their prerogatives, appealed to the Queen, she cancelled the contract.[38]

Finally, the claim that a quarrel between an apothecary and some physicians over the high prices of nostrums motivated the movement to erect a dispensary was ridiculed. The apothecaries were reminded that the Dispensary was founded on "Request of the Committee of the City; and the Dispensation of the Medicines was first offer'd to the Apothecaries by the Physicians, which they rejected." Besides, the physicians were forced to prepare their own nostrums since the apothecaries displayed a predilection for prescribing nostrums and lacked the ability to concoct them correctly. In any event, all the nostrums were in the Dispensary for general use, and they were quite inexpensive.[39]

Apparently the sick poor people of London were not influenced by the attacks on the Dispensary. So many of them thronged to it that it was necessary to open two branches, one at St. Martins Lane, Westminister, and the other at St. Peter's Alley in Cornhill. In-

[37] *A short account*, pp. 37-39. In 1701 a writer favorable to the Dispensary declared: "The great Increase of *Apothecaries* is evidently the cause of the present *Grievances* to the *Profession* of *Physick*, to *Themselves* and the *People*. Thy are become one *Thousand*, including the *Partners*, more than ten to one *Physician*." *The present state of physick & surgery in London* (London, 1701), p. 6.

[38] *A short account*, p. 36.

[39] *Observations upon the case of William Rose an apothecary, as represented by him to the most honourable House of Lords, upon his bringing the case before the said House by writ of error, in order to have the judgment obtain'd against him, by the College of Physicians, in the Queen's Bench, reversed* (London, 1704), pp. 14-15.

deed, the filling of prescriptions at the Dispensary seemed so advantageous to the patients that many physicians advised all their patients to avail themselves of this service. To justify the furnishing of medicines at the Dispensary to rich patients four reasons were advanced. First, the drugs were declared to be of the best quality available. Second, there were many excellent remedies not yet entrusted to the apothecary shops. Third, "Because the Physician was not obliged to prostitute his Honour and Conscience, by overloading his Patient to oblige a Craving Apothecary; or to run the risque of being undermin'd in his Reputation by Slanderous Suggestions for not submitting to be the Apothecary's Under-Pick-Pocket." And lastly, "Because he could serve his Patient Quantity for Quantity, and Quality for Quality, (supposing the Apothecary's Medicine to be as good as can be made) fifteen shillings in the pound cheaper than any where else; which is a Thrift the greatest Man who does not love to be Cheated, needs not be ashamed of."[40]

Unfortunately, the estimates of the number of prescriptions filled at the Dispensary were made by proponents of the charitable scheme. Dr. Pitt in 1703 claimed that approximately 20,000 prescriptions were filled yearly at an average cost of a penny apiece.[41] A more conservative and seemingly more exact estimate was made a few years later: "They began to make up Bills about the beginning of February 1697, and for the first Three Years, the number of Bills made up was thirteen thousand one hundred and ninety two, and in these last Three Years and ten Months, (for the Calculation was taken December 1, 1704) they are increas'd to seventy one thousand nine hundred and ninety nine."[42]

The controversy concerning the Dispensary seems to have died down about 1705. Early in 1701 the Society of Apothecaries seriously considered legal proceedings against the Dispensary, but abandoned the idea, fearing that there was not enough evidence to insure a successful action. As an alternative, an appeal to Parliament was projected, but apparently nothing came of this plan.[43] Still, many apothecaries felt that since they could not successfully oppose the Dispensary, it was especially important that they show themselves to be as charitable as the Dispensary physicians pretended to be. Accordingly, on 19 November 1701, the Society of

[40] *Ibid.*, p. 13.
[41] Robert Pitt, *The craft and frauds of physick expos'd*, 2d ed. (London, 1703), p. 21.
[42] *A short answer to a late book*, p. 34 .
[43] Guildhall Library, *Society of Apothecaries* MS 4200, *Court Minute Books*, vol. 4, f. 149.

Apothecaries voted that they "should offer the Corporation for setting the poor on Worke to furnish them *gratis* with necessary medicines for three Years." Funds for this charity were to be raised by voluntary subscription.[44]

For about twenty years, 1705-1725, the Dispensary functioned efficiently without much fanfare. The reasons for its discontinuance are not revealed in the official records. Perhaps the reforms it was established to accomplish were largely realized. Perhaps the passing from the scene of the originators of the charitable scheme resulted in a loss of interest. Or perhaps Dr. Paxton was right when in 1703, after declaring the Dispensaries were too few to meet the problem of providing adequate medical care for the sick poor, cynically he prophesied:

> Nor can they be, in my weak Judgment, of any long Continuance, because notwithstanding the College abounds in learned and generous Members, which may prefer *Charity* to *Gain*, yet no account of time I think, will yield one single Instance, where a Charity that hath no other footing than the Will of Men, could preserve it self to any marvellous Age: in that Men in process of time will have different Ends and Aims, some of which not always being consistent with such Charitable Designs, they gradually and naturally moulder and decay.[45]

On 23 June 1725 at a meeting of the Royal College of Physicians a motion was made to appoint a committee to determine what was proper to do with the portion of the College leased to the Dispensary when the lease expired at next Christmas. On 13 July, a motion was unanimously passed that no part of the College should hereafter be let out on lease. And on 20 April 1726 the committee made its report and it was evident that the Dispensary would not be continued. They resolved that "the Room over the Dispensary be fitted up for the Use of the College Beadle, and the Dispensary-Room for the Reception of Licentiates etc."[46]

[44] *Ibid.*, f. 145.

[45] P. P[axton], *The grounds of physick examin'd: and the reasons of the abuses prov'd to be different, from what they have been usually assign'd. In answer to a letter from the ingenious Dr. G———* (London, 1703), p. 6.

[46] Royal College of Physicians MS. *Annals.*

The Oldest Hungarian-Printed Medical Historical Document

ÁKOS PALLA*

As compared to other European nations, medical scientific literature in Hungary was very meagre in the fifteenth century. For this reason attention has been directed to any work in which there is a trace of Hungarian influence and the objectivity of such work is doubtful. Even so, the number of such publications does not exceed four, including a codex, an incunabulum, a medical diary, and a small broadside. Due to the state of social conditions in the fifteenth century curative medicine derived information from foreign countries and thus there are no medical works available in Hungary from that period. This is the cause of the high esteem given to these old reliquiae. In the course of studies on Hungarian ancient documents last year the oldest printed Hungarian medical document was discovered. Before dealing with that I should like to give a chronological account of the material known thus far.

In the period 1462-72 a codex was prepared by János Aranyasi Gellértfi containing a medical study in Latin entitled *Tractatulus de custodia quinque sensuum.* The Magyar Krónika (Hungarian Chronicle) was printed in 1482, allegedly in Buda (Hungary), by András Hess for Mihály Mannsdorfer, rector of the university of Vienna, a friend of Sorbait. It is doubtful whether it contains medical matter. This incunabulum is unknown but is presumably extant as it is claimed by Denis.

János Tichtel, a Viennese physician, who treated King Mathias Corvinus and his wife Beatrice of Arragon at the baths of Baden, wrote his diary with the date 21 September 1488. It has not been printed and is available only in manuscript.

The *Tabula minutionum super meridianus Budensi,* a schedule for monthly venesections based on the Buda meridian, was published under the date 1495. This is a broadside by Johannes Muntz, a magister of Nuremberg. Subsequent editions are based on the Viennese meridian and thus contain no reference to Hungarian relations.

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In the list of printed medical reliquiae the earliest one known thus far is the missal of Esztergom (Strigonium) printed in 1512, which contains a mass against the *morbus gallicus* (French disease): "Missa de beato Job contra morbus gallicus."

A number of missals contain statements concerning diseases, but these are prayers and are related to exorcism and plague. Thus, they are not medical historical documents of first rank.

The work to be discussed bears the following title: *Sermones dominicales perutiles a quodam fratre Hungaro ordinis minorum de observantia comportati. Biga salutis intitulati feliciter incipiunt.* (Fig. 1). As to the author, opinions vary. First it was suggested that he was Michael de Hungaria, then Pelbartus de Temesvár, and, finally, Osvaldus de Laskó. The work was discussed by contemporary writers and to this day the search for the author continues. First of all, the possibility was rejected that the author might have been Pelbartus de Temesvár. Subsequently, there are two trends of opinion among foreign and Hungarian authors. Ehringer, Wadding, Maittaire, and Weisslinger claim that Osvaldus de Laskó is the author, whereas Zwittinger, Panzer, and Holtropp suggest Michael de Hungaria. Hungarian investigators are now convinced that the author is Osvaldus de Laskó.

The work was a renowned and widely known book in its day. François Rabelais (1483-1553) in the second volume of *Pantagruel* in the list of the books at the Saint Victor Abbey mentions the *Biga salutis* among the first ones. It has been mentioned also by Marci Philippi, a poet of Sicily, in 1550, by Conrad Gesner, a polyhistor of Zurich, in 1555, by Petrus Rudolphus, a clerical chronicler, in 1560, by Anthony Possevino, a Jesuit who served as a diplomat in Hungary in the period 1583 to 1584, then by many others, and finally in the 1920's by Richard Horváth.

According to the colophon (Fig. 2) the ancient work was printed in Hagenau, 22 January 1498, on orders from the Franciscan convent. It contains 124 ecclesiastical sermons on 436 unnumbered leaves. The sermons deal with a very wide variety of subjects and touch upon almost all branches of contemporary sciences and these have all been studied, except those relating to medicine. The latter aspect has not been studied yet.

At that time science had escaped from the suppressive influence of ecclesiastic dogmas, and the concepts of knowledge and religion were clarified on grounds of logic. On the other hand, this view is manifest only in traces in Chapters CI and CII, which are interesting for us by virtue of their touching upon medical problems. In

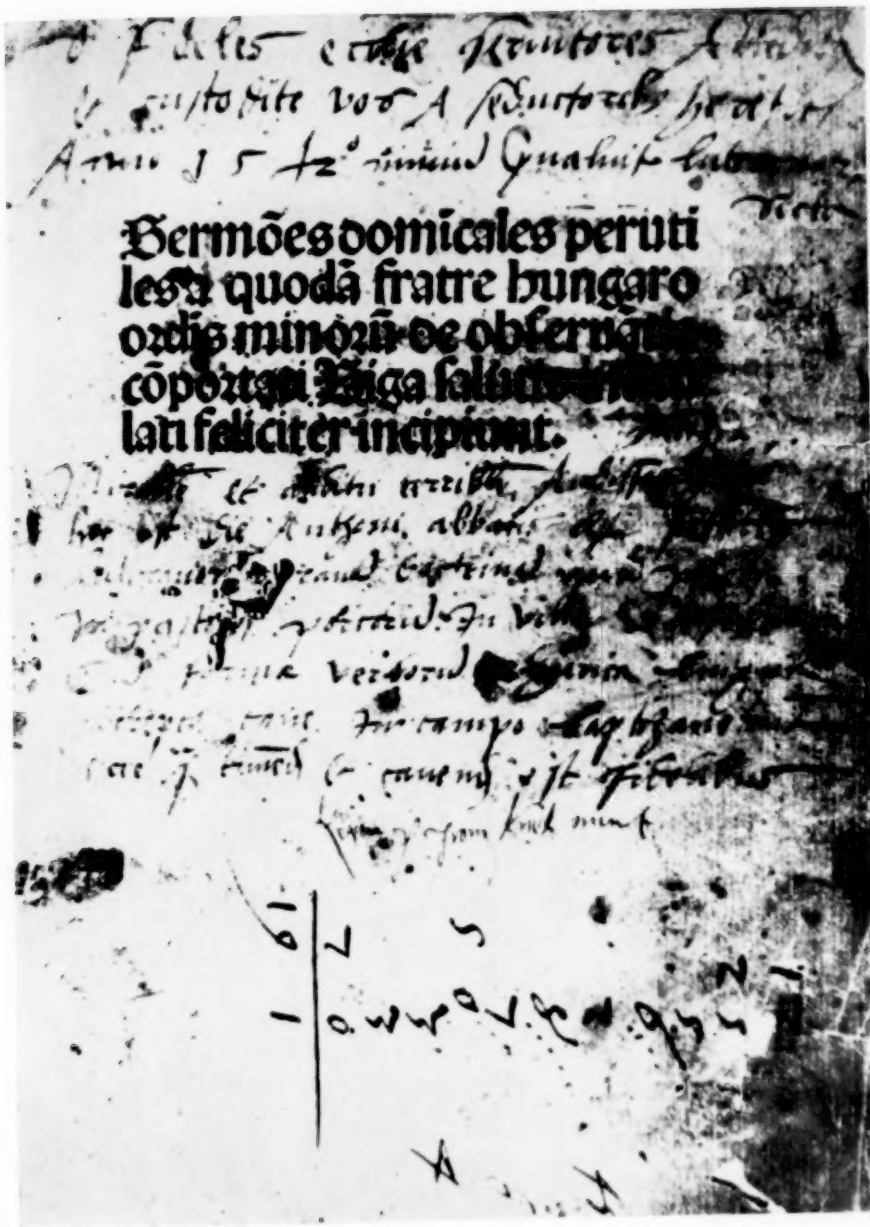

FIG. 1. The first page of the *Biga salutis*.

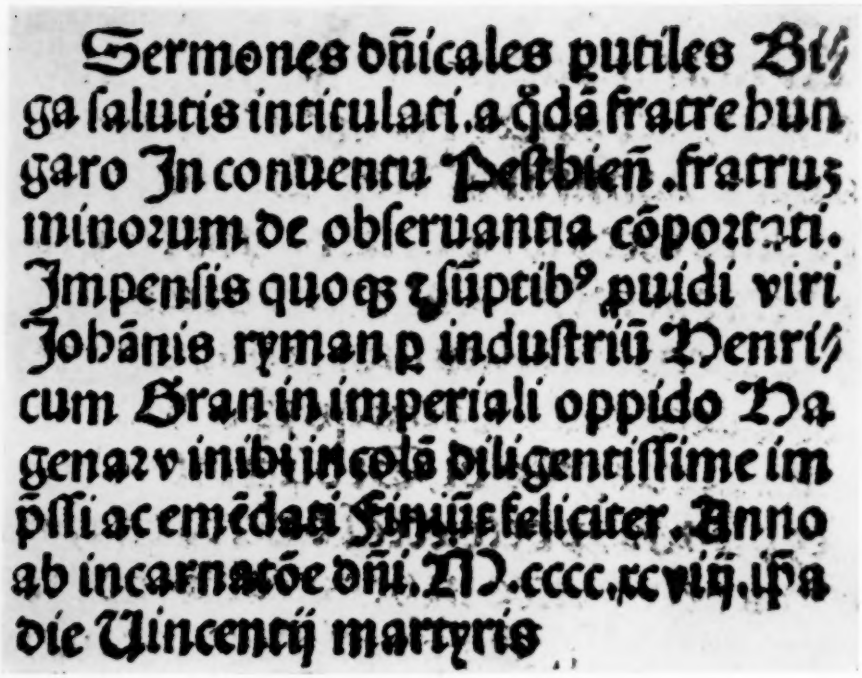
Sermones dñicales vtiles Bi/
ga salutis intitulati. a ḡdã fratre hun
garo In conuentu Pestbien. fratruz
minorum de obseruantia cõportati.
Impensis quoq; ꝟsũptib⁹ puidi viri
Johãnis ryman q industriũ Henri/
cum Bran in imperiali oppido Ha
genaw vinibi incolã diligentissime im
pssi ac emẽdati finiũt feliciter. Anno
ab incarnatõe dñi. M.cccc.xcviij. ipa
die Vincentij martyris

Fig. 2. The colophon of the *Biga salutis*.

Dominica tredecia post pẽthe.

de q̃ due sunt opiniões famose. Pria
est ista. Tho. sup. iij. di. j. z eũ sequuntur
Alii dicũt q̃ in alia digne suscipiẽti sa
cramẽta duo effect⁹ spũales sequunt.
Prim⁹ character in tribꝰ sacris. pura
baptismo ordie z confirmatõe. In alijs
vo q̃dã ornat⁹. Scõs effect⁹ ẽ ipa gra
tu ificãs z gratũ faciẽs. ita q̃ de⁹ de
dit sacris hãc vtutẽ vt pducãt chara
cterẽ vel ornatũ in aia q̃ est dispositio
immediata ad grãm quã de⁹ infũdit
creãdo nisi ponat ds obicẽ gre. z pbãt
tali creplo. Dicit enĩ Damascen⁹ i suo
tercio. q̃ xpi hũanitas fuit qdam in
strumẽtũ diunctũ deitati. z ió hũana
natura cõicabat aliq̃d in ope vtutis
diuie. Vñ q̃ xps tangẽdo sanauit in
firmos tunc sic diuitas sanauit pnci
palit. sic tact⁹ xpi corpal sanauit tangẽ
instrumẽtũ imediatũ. ita fit p appli
cationẽ sacri ds tãgẽ dei instrumẽtuz
causat aliquẽ effectũ in ania quẽ ex se
causare nõ posset. z sic sacramẽta nõ
sũt tm signũ. sic incãtatões magoz q̃
posite sub lecto nihil agũt. sz demões
p illã pactões. Alia opinio ẽ Scoti
z mltoz seq̃ntiũ z dicẽtiũ. q̃ nõ est ali
qua vtus spũalis in sacramẽt' quã
de⁹ eis infundat. puta nec i aqua ba
ptismi. nec i oleo vnctõis zc. Excepto
sacramẽto eucharistie vbi realit' xpine
tur xps. Cui⁹rõ est. q̃ nõ pt accidens
spũale ee in subiecto corpe ecclõso. q̃ ca
racter vel aliꝺ ornat⁹ non imꝑmit p
applicatõez sacramẽti. q̃ character ẽ
forma spũal' q̃ nõ pt esse termin⁹ acti
onis natural' sz tm̃ nõ creatõis. sicut
aia hũana z gratia. q̃ character vel or
nat⁹ pducit a deo solo. z sic facta nul
lũ tale effectũ pducere pñt. sz dicũt in
strumẽtal' cã gre solũ. q̃ hñt aliquam
actionẽ naturalez ceteri⁹ circa corp⁹ q̃
facta z nõ cũ tẽte ipedimẽto in suscipi
ente de⁹ ita q̃ causat grãm ex pactõe
sua cũ eccl'ia. De⁹ enĩ pepigit cũ eccl'ia
firmit' vt q̃cũq̃ rite suscipit sacra no
uele. sil' cũ illis accipiat grãm a solo
deo imediate creatã. qõ tali creplo p
hãt. sic si aliꝺs pnceps p signo pac'
statuit tractũ man⁹ dettere. vt cui por
rigit dettera habeat firmã pacẽ cũ eo ni
si ipediat indispositio alteri⁹. Tũc ta
ctu man⁹ ponit pax. z tñ ille tact⁹ nul
lã dispositionẽ effectiuã pac' ponit in
ania. Sic in posito de⁹ p applicatõz
sacro z sol⁹ causat grãz in aia. Sz sive
sic sit sive vt pma opinio dicebat. tñ
vez ẽ q̃ p susceptõez sacro z rite tractã i
fũdit grã i aia hois susciptẽt' z sanabit
ab infirmitate spũali. quã medicinã nul
la pura creatura nobis sic disponere
potuit sic xps de⁹ nr̃. quẽ sup oia debe
mus diligere z ei seruire ac grãs age
re. q̃ cũ p're z s.s. viuit zc.

Dñica tredecima post pentbe.

Sermo. q.

Vm ingre

c derẽt in qꝺaz castellũ oc
currerũt ei decẽ viri leprosi
Lu. xvij. c. Cũ dñs ihs ꝑueraret vsus
hierl'm instãte in primo passiõis tpe
z p mediũ ista z duaz puinciaz vicz
samarie z galilee iret. z dũ intraret in
qꝺ ciuitatẽ obuiauerũt ei decẽ viri le
prosi ma z voce petẽtes ab eo sanita
tẽ. D Vñ in cuãgelio tria tãgũt. s.

Primo hũane infirmitat' infectõ.
Scõo diuie mifatõis ꝓdescõio.
Tercio hũane curatõis grãz actõ

Primo i hodierno cuãgelio tãgit hu
mane infirmitat' infectio cũ dr. q̃ dũ
saluato: ingrederet in qꝺã castellũz
id ẽ in hunc mũdũ q̃ est triplici muro
munit⁹. vicz carnalis ꝓcupie. tpalis
affluẽtie. z mũdialis excellẽtie. Et tũc
curauit decẽ viros leprosos ei deuote
supplicãtes, i. petõtes decẽ ꝑceptoruz

Fig. 3. Sermon CI dealing with leprosy.

these chapters there are two sermons on leprosy (Fig. 3) and sin in a scholastic manner, and in them the author justifies his mention of the cruelest of bodily sufferings. It was with the same aim that Miguel Servet, who was sent to the stake on Calvin's instructions at Geneva, made mention of the lesser circulation in his work entitled *Restitutio Christianismi.*

Osvaldus de Laskó tells us the cause of the disease leprosy *(infectio leprae corporalis)* and describes its symptoms. As he puts it, the disease originates from a decay of the nutrient humour and has four types, just as there are four kinds of humour. This view is based on the Hippocratic doctrine of the four bodily humours, a proper admixture of which characterises the well, and a bad admixture, the sick man.

At first, the disease originates from the pure black bile (*ex pura melancholia*). From that large animal the elephant, it is called elephanthia. Secondly, it originates from the black bile and phlegma, and is called tyrusi or serpentina (from the serpent). Thirdly, leprosy results from the infection of blood with black bile and this time it is called vulpina. Fourthly, leprosy arises from a contamination of the red bile (*ex cholera rubea*) with black bile (*corrupta cum melancholia*). This disease is called leonina, from the wild beast the lion.

After that, the author deals with the origin of leprosy. The basis of any kind of *lepra corporalis* is the decay of the black bile. Leprosy originates from the cold and dry, inflamed and decaying black bile, and this manifests itself on the external aspects and surface of the body. Likewise, leprosy develops from eating too hot, too spicy (onions, pepper) foods, or from the very cold foods with dry black bile—from ox-meat and from donkey-meat.

Finally, the *lepra carnalis* originates in family life, through talks with people with leprosy. Because the disease is contagious, such people should be avoided.

As to the symptoms, the following description is given. *Lepra corporalis* has numerous signs (*signum*). The first symptom is that the voice turns hoarse. Those who can only whisper and talk in a low voice are suspects of leprosy. Another symptom is dyspnea and fast respiration (*fetidus anhelitus*). The third symptom is twinkling and sparkling of the eyes, this being most characteristic of leprosy. The fourth symptom is atrophy of joints and fingers, thickening of nails, a kind of scabiosity (*cum quadam scabiositate*) and the numbness of bigger fingers (*insensibilitas*). Finally, there are sensory loss of the lower legs (*crurium insensibilitas*) and a big-

ger tibia. As the author puts it, leprosy tortures the patient all the time, both day and night.

As to purification, he quotes the *Bible* and suggests the following procedure:

> Catch two sparrows, bind one of them to a cedar tree by means of a red thread wetted twice, then prepare an aspersorium from *Hysoppus officinalis* (effective ingredient hesperidine, an astringent and irritant). Sacrifice the other sparrow over living water in a earthenware dish, spray the patient with leprosy with this bloody water, then the sparrow bound to the cedar tree, and lastly spray both with *Hysoppus officinalis.* Finally, let the living sparrow fly to a barren place.

These statements, of course, are not dialectic. Among his statements concerning the living world he makes an interesting botanical note: "The plants, which have a vegetative soul, are more valuable than all the gold of the world."

Osvaldus de Laskó was a priest. He was a man of the late fifteenth century, had no Renaissance culture and yet in his sermons he definitely deviates from the earlier view of leprosy. He does not think leprosy to be a punishment sent by God, or a ransom for a better life in the other world to come, but as he puts it, it is "one of the dreadest of diseases." In this he opposes those who claim disease to be a promise for a better fortune in the world to come and his view is in part based on medical thinking.

It is justified to ask whence he had acquired contemporary medical knowledge. What he did in his youth is unknown, the only reliable information about him being the date of his death. He died in Buda, Hungary in 1511. We know that he had been to Milan, Rome, and Assisi. In his sermons he often refers to Avicenna, Johannitus *(De organisatione corporis humanis),* Galen (*Libri medicinalium*), but his name is not included in the list of Hungarian university students studying abroad. Therefore, it is possible that his thoughts expressed in his sermons in regard to diseases originate from reading medical works.

The Discovery of the Carotid Body

JOSEPH PICK*

TO write the history of the carotid body is to write the history of a special type of cells which possess the remarkable faculty of registering subtle changes in the chemistry of the blood, and of transforming these changes into a nerve stimulus that triggers off a general reaction aimed at the restoration of the normal tension of blood gases.

The story begins with the discovery of the gross anatomy and innervation of this inconspicuous structure. According to Valentin[39] and Luschka,[22] the first description of the carotid body must be ascribed to Albrecht von Haller[14] who mentioned the structure as the "ganglion exiguum" in 1762. He wrote:

> From the ganglion cervicale superius the nervi molles emerge . . . and accompany the carotid artery. . . . There are two or three such nerves. Of these, the inferior is the largest and it forms in the division of the carotid a plexus in which I have not infrequently seen the "ganglion exiguum." This plexus is joined by branches from the eighth laryngeal and pharyngeal nerves.

There exist, however, several, and in fact more accurate, descriptions before 1762.

It was Taube (Fig. 1),[38] a student of Haller who named the structure "ganglion minutum" and described it in 1743 as follows:

> The story which I began would not be complete without mentioning the large rami arising from the large ganglion of the nervus Intercostalis, and which travel behind the carotid and form in the angle of the internal and external carotid the "ganglion minutum," small branches of which, as far as I can see, enter the coats of this artery.

Considering Haller's[14] interest in the influence of the nervous system upon the heart and blood vessels, one can reasonably assume that he became puzzled by the "small branches which enter the coats of the carotid artery." It is, therefore, quite possible that he suggested that Berckelmann (Fig. 2), another student of his, investigate the innervation of the arterial system. In the course of this study Berckelmann encountered the carotid body again: "Certainly many nerves disappear in the coats of the arteries. . . . From the nervus Intercostalis and from the main cervical ganglion, sev-

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DISSERTATIONEM INAVGVRALEM

DE

VERA NERVI INTERCOSTALIS ORIGINE

PRO SVMMIS IN ARTE MEDICA HONORIBVS RITE CONSEQVENDIS

PRAESIDE

D. ALBERTO HALLER

MED. ANAT. BOT. CHIR. P. P. O. ARCHIATRO REGIO SOC. REG. BRIT. ET SVEC. SOD.

PVBLICE DEFENDET

HARDOVICVS WILHELMVS LVDOVICVS TAVBE,

CELLENSIS

DIE XXXI. JANVARII MDCCXXXXIII.

GOTTINGAE,

APVD ABRAM VANDENHOECK, ACAD. TYPOGR.

FIG. 1

DISPVTATIONEM INAVGVRALEM
ANATOMICO PHYSIOLOGICAM

DE

NERVORVM IN ARTERIAS IMPERIO

EX CONSENSV ORDINIS MEDICI

PRO SVMMIS IN MEDICINA HONORIBVS LEGITIME OBTINENDIS

PRAESIDE

ALBERTO HALLER

M. PH. D.

MED. ANAT. BOT. CHIR. P. P. O.
CONSILIARIO AVLICO ET ARCHIATRO REGIO
SOCC. SCIENT. ANGL. ET SVEC. SOD.

PVBLICE ERVDITIS PROPONIT

MATTHIAS LVDOVICVS RVDOLPHVS BERCKELMANN

GANDERSHEIMENSIS.

AD D. XV. SEPT. A. R. S. MDCCXXXIV.

GOTTINGAE,

TYPIS ABRAM VANDENHOECK, ACAD. TYPOGR.

FIG. 2

CAROL. SAM. ANDERSCH

TRACTATIO

ANATOMICO-PHYSIOLOGICA

DE

NERVIS

HVMANI CORPORIS ALIQVIBVS,

QVAM EDIDIT

ERNST. PHILIPP. ANDERSCH.

PARS ALTERA.

REGIOMONTI,

APUD AVGVST. FASCH.

MDCCLXXXVII.

FIG. 3

Fig. 4. The cervical nerves (Carl Samuel Andersch, *ca.* 1751-1755).

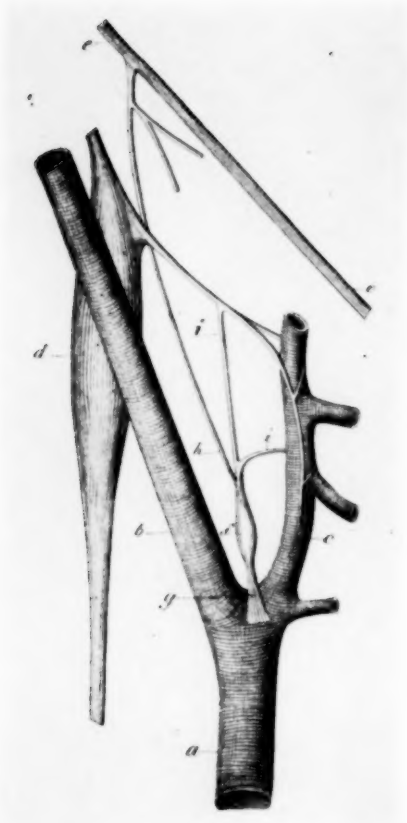

FIG. 5. The carotid body and its innervation by the glossopharyngeal and vagus nerves (Mayer, 1833).

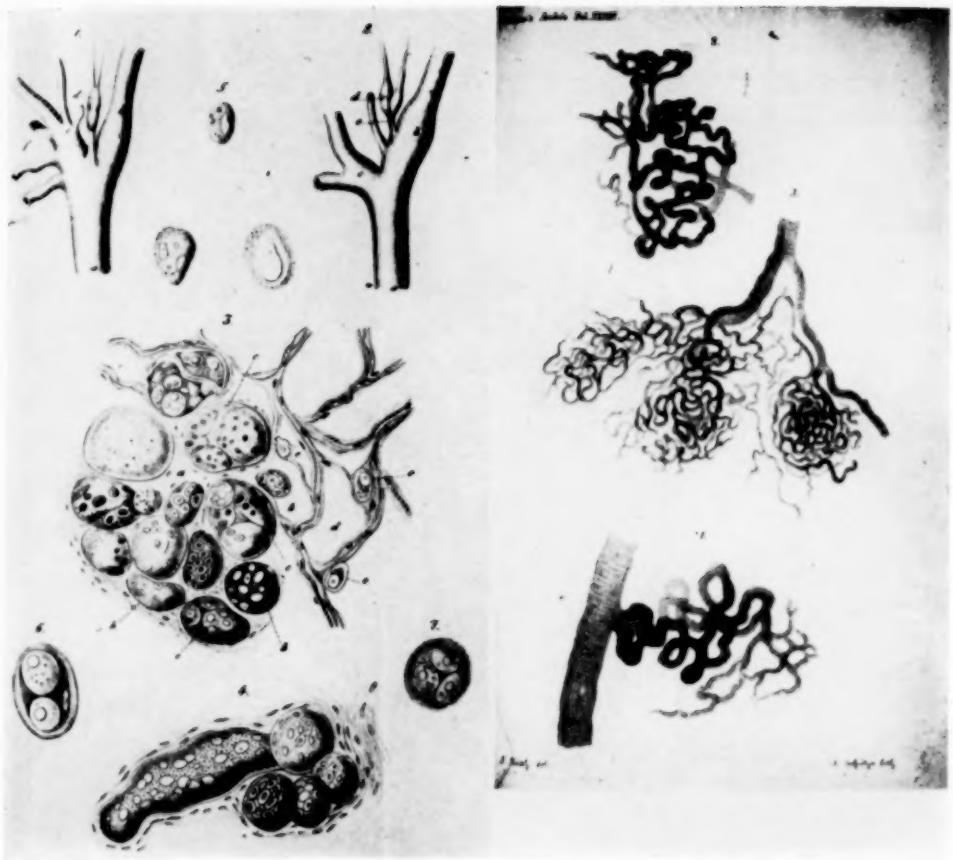

FIG. 6. The "glandula carotica" (Luschka, 1862).
FIG. 7. The "glomeruli arteriosi intercarotici" (Arnold, 1865).

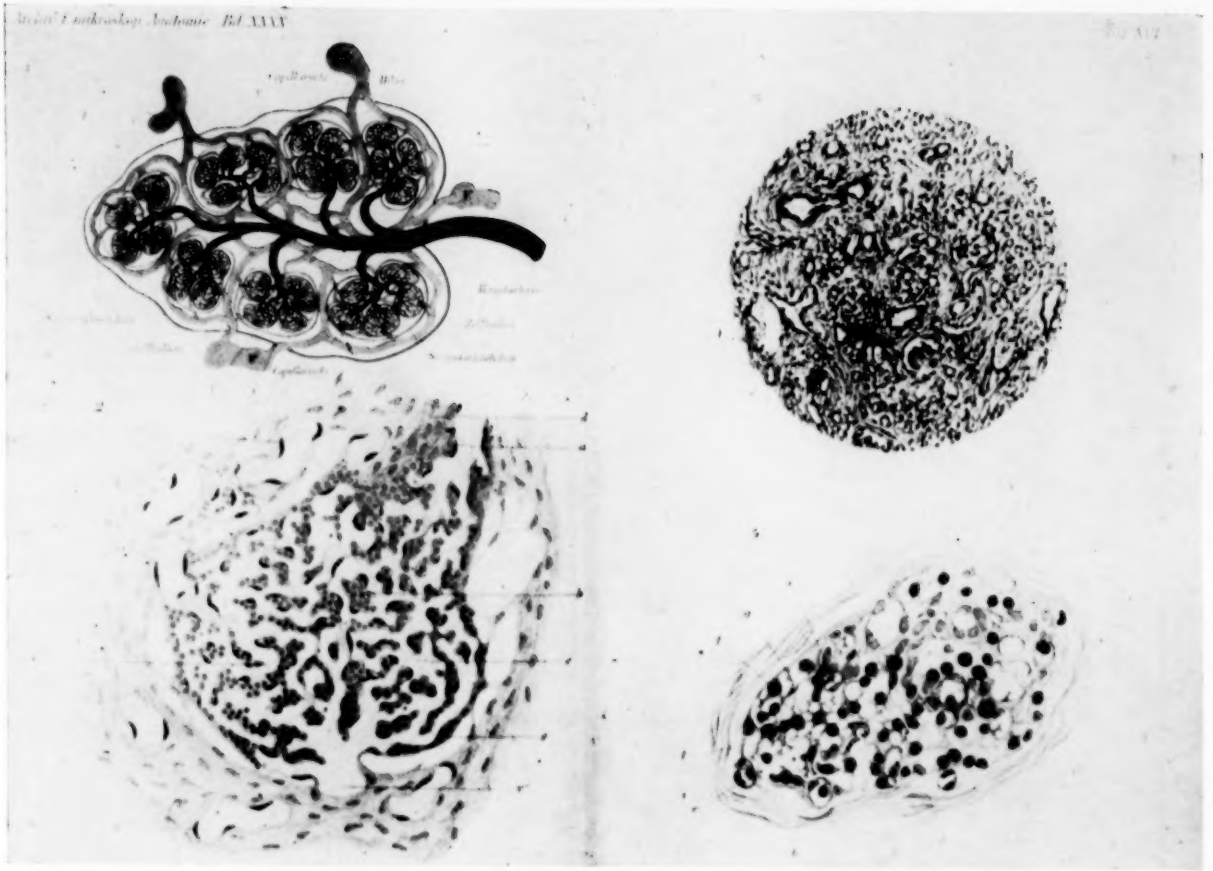

FIG. 8. Histology of "Glandula carotica" (Schaper, 1892).

eral rami are given off on the posterior aspect of the internal carotid where they form a ganglion in that fork where the external comes off the internal."[5]

The carotid body was "re-discovered" and its nerve supply described with remarkable precision by the "unhappy Carl Samuel Andersch"[2] (see Valentin[39]) whose writings were almost lost to posterity. The original printing of his work, which was first published between 1751 and 1755, was sold as waste paper because of some difficulties between the faculty and the publisher. Ernst Philipp Andersch, the son of Carl Samuel found by mere chance an original copy of his father's publication on a heap of waste paper in the corner of a book store. Fortunately, young Andersch had this work reprinted in 1797 (Fig. 3)[2] including an accurate illustration (Fig. 4) of the cervical nerves after a dissection made by his father.

In regard to the carotid body, Andersch wrote in the second part of his *Tractatio anatomico-physiologica de nervis corporis humani* . . . "there remains to discuss a noteworthy gangliolum, which, by virtue of its location we call gangliolum intercaroticum." He also states specifically that the "nervi molles" (the sympathetic), "the first nervus pharyngeus" (the glossopharyngeal), and "the tenth nervus" (the vagus) send branches of "whitish" and "reddish" color into the "gangliolum intercaroticum." Andersch definitely claimed priority for this discovery: "Meanwhile that gangliolum intercaroticum, *seen by no man,* I have observed better formed and with more small branches, just as very often I have observed two or three branches descending from the soft nerves into it."

For a while the carotid body remained forgotten, but again it was "newly" discovered by Mayer[23] in 1833; he studied the organ first in the horse and later, also in the calf and in man. As will be seen (Fig. 5), Mayer clearly recognized branches of the sympathetic, glossopharyngeal and vagal nerves as the sources of the nerve plexus which innervates the "ganglion intercaroticum" and he also described a "little band" which fastened the ganglion to the carotid bifurcation. It is noteworthy that Mayer referred in detail to the ganglia which Andersch described in the course of the "Nervus harmonicus," but surprisingly did not mention the "gangliolum intercaroticum" for which Andersch devoted a page and a half in the second part of his *Tractatio anatomico-physiologica.*

Valentin[39] acknowledged that Mayer had called new attention to the "gangliolum intercaroticum" but politely denied him the

merit of an original discovery by quoting the earlier publications on the subject. Valentin observed a ganglion intercaroticum in 18 human cadavers, present bilaterally except in one case where he found the ganglion on one side only; he regarded the structure as part of the sympathetic, although he recognized that the vagus and glossopharyngeal contributed conspicuously to its innervation. Valentin found the "little band" that Mayer had described to consist microscopically of nerve fibers and was doubtless aware of the fact that the nerve plexus supplied in addition fibers to the carotid bifurcation, an observation which is of considerable interest in the history of the carotid sinus reflex.

Thus, it becomes evident that the anatomists of the eighteenth and early nineteenth centuries regarded the little structure in the carotid bifurcation as one of the many ganglia which are interspersed in the course of the sympathetic.

The carotid body did not receive much attention for the next 30 years, until microscopic investigations became more fashionable; it was soon included in such studies. Beginning with Luschka[22] the search for its microscopical nature touched off a tug-of-war which lasted until recent years.

Luschka studied the "ganglion intercaroticum" in the horse, calf, and in man. His conclusions are all the more remarkable when we realize that he used merely crude sections of the dried organ or after previous fixation with chromic acid or sometimes whole preparations which were flattened between two sheets of mica (Fig. 6). "It is, therefore, most likely," he wrote, "that the organ under discussion possesses the essential characteristics of the so-called nervous glands [Nervendrüsen] which—for the moment, e.g. until we know more about their function—we have to think of as organs whose typical marks are alveoli and tubules containing cellular elements. . . . [The nervous glands] have great similarity with the adrenals, the anterior lobe of the hypophysis and particularly with the coccygeal gland which is intimately connected with the sympathetic nervous system." Luschka, then, suggested the name "Glandula carotica," but specifically distinguished it from the carotid gland of the frog, in which that organ is formed by a swelling of the carotid artery as shown also more recently by Carman.[8]

It is true that Luschka regarded erroneously the 'Rami vasomotorii' of the sympathetic as the principal nerves to the 'Glandula carotica'; he described cells 'within the alveoli and tubules,' a misinterpretation which indicates, as Kohn[20] put it, that the concept

of 'glands' had not been precisely formed in Luschka's day; finally, he may have had incorrect ideas on the development of his 'Glandula carotica,' which is not surprising because its embryology was virtually unknown at the time.

Nevertheless, Luschka was the first to break with the tradition of interpreting the little structure as another sympathetic ganglion. He was, undoubtedly, the first to recognize the glandular or, as we call it today, the 'epitheloid' character of the cells of this organ, and by recognizing its morphological kinship with the adrenals, pituitary, and coccygeal gland, he became one of the first discoverers of the endocrines.

Arnold,[3] in 1865, was the first to challenge the interpretation of the organ as a "gland." He examined it in the calf, dog, and in man. For his studies he used preparations which had been injected through the carotid arteries. "The ganglion intercaroticum," he concluded, "consists of three to four granular masses; each of these is formed by several aggregations of tissue which vary in size and complexity. These aggregations must be interpreted as 'vascular glomeruli' on account of their relations to the circulatory system. The individual loops forming [these glomeruli] contain blood and possess a homogeneous wall which is lined from the outside by a layer of epithelium or perithelium" (Fig. 7). Arnold, therefore, called the entire structure "glomeruli arteriosi intercarotici." He confirmed previous gross anatomical findings and described in addition myelinated nerve fibers and "fine axis fibrils" of sympathetic origin together with a few ganglion cells scattered throughout the "glomeruli." In summary, Arnold rejected Luschka's interpretation and insisted that the structure is nothing more than a vascular glomerulus and not a gland.

At first, a modern histologist may be astonished that Arnold lightly regarded the glandular cells of Luschka as "perithelium" which allegedly lines the outside of the wall of blood vessels. However, this is quite understandable, because in those days the existence of such "perithelial cells" was widely accepted. Thus, a perithelium of the lymph capillaries was first described in the intestine by Auerbach.[4] Later, in 1870, Eberth[12] observed such cells in the walls of the cerebrospinal blood vessels, and Waldeyer[49] in the blood vessels of the testicle of bats, mice, and rats. The existence of a perithelial lining around arterioles was emphatically denied by Kohn[20] and subsequently disappeared from the conventional textbooks of histology.

The dispute between Luschka and Arnold was continued by their students. For example, Pförtner,[26] working in Arnold's laboratory, examined the "glomeruli intercarotici" in the cat, sheep, hedgehog, rabbit, and in man. He conceded that the organ gives the impression of a gland when treated with acetic acid as Luschka did, but when using Arnold's method of injection, the structure appears to be a true vascular glomerulus. Pförtner clearly noticed the epithelial cells on teased preparations and emphasized particularly the increase in thickness of the vascular wall, when one traces the arterial system from their major branches to the capillaries. On the other hand, Heppner,[15] who was a follower of Luschka, emphatically repudiated Arnold's views and regarded the questionable structure as a gland.

In spite of this controversy, Luschka and Arnold were, after all, not too far apart in their views; their differences in interpretation can easily be explained by the difference in their methods of study. Luschka, relying more on sections of the dried or hardened organ, had to place more importance upon the cellular elements, while Arnold, using injected preparations, was obviously more impressed by the abundance of blood vessels but paid less attention to the cells which he must have compressed to a minimum by the force of his injections. Had Luschka and Arnold studied more extensively both sectioned material and injected preparations, they would have realized that several methods were needed to reveal the microscopical details of that organ.

Another 30 years were to elapse before such a combination was employed by Schaper[32] for the re-investigation of the "Glandula carotica." As will be seen (Fig. 8), the distribution of blood vessels as depicted by Schaper closely resembles the "glomeruli arteriosi intercarotici" of Arnold, while Schaper's illustration of microscopical slides reveals clearly the sectioned "alveoli and tubules" of Luschka.

In the latter half of the nineteenth century, the field of embryology gained increasing importance. The question as to the development of the carotid body again gave rise to a hot dispute which, curiously, was not unlike the controversy as to whether the organ should be looked upon as a "nervous gland" or "vascular glomerulus." It was Kölliker[21] who first suggested the study of the development of the carotid body: "All these observations," he wrote, "demand further investigations of the glandular organs of the neck, and make it highly probable that the branchial clefts of mammals are subjected to changes which had not been suspected

hitherto. Most certainly, the carotid gland must be included in these studies." Stieda[35] followed Kölliker's suggestion and regarded a thickening of the epithelium of the third branchial cleft as the anlage of the carotid body, because this epithelial proliferation is placed closely to the carotid bifurcation. Others, such as Fischelis,[13] Rabl,[29,30] and at first also Prenant,[27] concurred with Stieda, while Born[6] and Prenant[28] in a later publication doubted the branchial origin of the "carotid gland." Only Kastschenko[18] definitely declared that this structure is not a derivative of the branchial clefts but develops from a proliferation of the wall of the internal carotid artery.

Historically, it is interesting that Kölliker stimulated others to study the embryology of the neck though he is, at least in part, responsible for the misinterpretation of the origin of the carotid body from the epithelium of the third branchial cleft. This epithelial formation is in reality the anlage of the parathyroid gland (Sandström[31]). It is surprising that the German and French workers did not from the outset consider the parathyroid as a derivative of the branchial clefts; they may have been unaware of the discovery of Sandström, because his paper was written in Swedish and most likely escaped the attention of others.

The true fate of the epithelial formation of the third branchial cleft as forerunner of the parathyroid was definitely demonstrated by Jacoby;[17] Concurring with Kastschenko,[18] he regarded the carotid body as a derivative of the wall of the carotid artery.

Meanwhile, the pathologists became puzzled by certain tumors occurring near the carotid bifurcation. In their attempt to identify these tumors, they had to examine the histology and embryology of the normal carotid bifurcation. These studies led Paltauf,[25] for example, to believe that the questionable tumors originated from the carotid body, and he regarded this structure once more as a proliferation of the carotid artery, a view which was subsequently more widely accepted.

Thus far, however, all these studies did not help much in comprehending the nature of this organ. The question still remained whether to classify it as a mere vascular glomerulus, a gland, or both. And, what was more, its intimate connection with the lower cranial nerves and the sympathetic posed a difficult riddle to workers at the end of the nineteenth century.

The history of the carotid body entered a new phase through the studies of Kohn.[20] He regarded the classification of the cells as the crucial problem in the study of this organ. "These cells," he

argued, "are of a unique type which must be looked upon as an example of a new category of cells in general histology" and he categorically disagreed with any other previous interpretation. Kohn studied the organ with a great variety of methods and concluded: "As potassium dichromate produces a positive and rather conspicuous reaction, I shall tentatively call these cells which do not fit any other category 'chromaffine' cells."* He noticed the intimate connection of chromaffin cells with sympathetic nerve fibers, an observation which induced him to study once more the embryological development of the carotid body. His conclusions were new in that he saw the origin of chromaffin cells not from the epithelium of the branchial clefts or from a proliferation of the carotid artery, but rather as a modification of sympathetic nerve tissue similar to the chromaffin substance present in the adrenal medulla and near the abdominal aorta. He named the structure "Paraganglion intercaroticum," but about its function, Kohn "had nothing to say."

It is true that this histological and embryological interpretation was new. Nevertheless, in making it, Kohn regarded the little organ as the older anatomists did, as part of the sympathetic.

The carotid body received practically no attention for the next 30 years except that it had been mentioned (often in small print) in the textbooks of histology under the heading of "endocrines" or "chromaffin tissue" as "paraganglion intercaroticum," "glandula carotica," "ganglion or glomus caroticum," and—in some English texts—with the uncommitting term "carotid body." This indicates that histologists were still uncertain as to the microscopical anatomy of this structure and that its function had remained entirely obscure.

During the nineteen twenties, attention was focussed again upon the carotid fork, but this time the move was made primarily by physiologists who had been widely engaged in studying the influence of the carotid sinus upon the regulation of blood pressure and cardiac activity.

During these years, the most outstanding contribution to the knowledge of the significance of the carotid body was made by De Castro[10] of Madrid in 1928. He demonstrated that the sympathetic plays a minor role in the innervation of the organ and

* The priority of discovering chromaffin tissue claimed by Kohn[19,20] was challenged by Stilling[36,37] who insisted he had seen this type of tissue eight years before Kohn and had called this tissue 'chromophile' cells. Subsequently, a dispute ensued between the two investigators who attacked each other in a manner which was unworthy of these otherwise brilliant scientists.

brought forth evidence that the specific cells of the carotid body are not supplied by centrifugal (secretory) nerves, but by sensory fibers which have their cells of origin in the peripheral ganglion of the glossopharyngeal nerve. He concluded, therefore, that the structure is not an endocrine gland, and suggested boldly: "[The carotid body] is a special sensory organ which serves to perceive some qualitative changes of the blood rather than . . . to register the variations of blood pressure." Thus, De Castro paved the way for the discovery of the function of the carotid body, which was made in the laboratories of Heymans[7,16] in Belgium and Schmidt[9,33] in Philadelphia.

Soon it became evident that experimentation on the carotid sinus region, such as occlusion and decompression of the carotid arteries and elimination or excitation of the "sinus nerve," regularly produced typical changes in the level of blood pressure and cardiac activity.

The accompanying respiratory responses, on the other hand, were most erratic and difficult to assess. Presently, Heymans, Bouckaert, and Dautrebande[16] discovered that the carotid bifurcation gives rise to two separate reflexes: "It is evident that the area of the carotid sinuses constitutes reflexogenic zones which are not only sensitive to variations in the pressure of blood or perfused solutions, but also in a quite special manner—to certain chemical agents such as asphyxic, anoxemic, acapnic and hypercapnic blood."

Next, it had to be demonstrated that pressure and respiratory reflexes originate from two separate areas of the carotid fork. Heeding the ingenious suggestion made by De Castro (1928)[10] Bouckaert, Dautrebande, and Heymans[7] eliminated the pressure receptors of the carotid sinus by appropriate ligations which, however, left intact the sinus nerve and blood supply to the carotid body: "The chemical sensitivity was absolutely preserved; in fact, the injection of small doses of lobeline, nicotine, etc., . . . into the common carotids produced the same stimulation of respiration . . . as in the normal carotid sinus."

Thus, the existence of two separate "pressure" and "chemoreceptive" zones was established, but it remained to be shown that the chemoreceptors are really located in the carotid body as proposed by De Castro[10] and by Heymans *et al.*[7,16] This could be demonstrated by Schmidt[33] and Comroe and Schmidt[9] in the dog owing to the peculiar anatomy of the carotid body in this animal. In most laboratory animals and in man the carotid body is placed

close to the carotid sinus and supplied by several small arteries which arise from the angle of the carotid bifurcation. This anatomical arrangement renders separate experimentation on the carotid sinus and carotid body extremely difficult, if not impossible, in these forms. In the dog, on the other hand, the carotid body is usually more remote from the carotid sinus, being placed on the occipital artery from which it receives a small branch (Fig. 9).[33] This anatomical arrangement permitted Schmidt and Comroe to abolish the chemoreflex by clamping the little branch to the carotid body, but to reinstate normal respiratory responses by releasing this blood vessel. And so the chemoreceptors were located in the carotid body and the original hypothesis of De Castro was confirmed. The physiological significance of the carotid body was thus established.

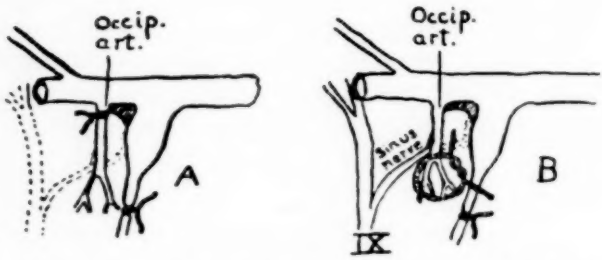

FIG. 9. The blood supply of the carotid body in the dog (courtesy of Carl F. Schmidt, *Amer. J. Physiol.*, 1932). Change in dissection which furnished positive "chemical reflexes" in dogs. A. Occipital artery tied at origin from carotid: pressure reflexes present, chemical reflexes absent. B. Occipital artery tied beyond line of exposed sinus nerve: pressure and chemical reflexes both present.

This is certainly a long story—long because anatomists had been puzzled by the little organ which did not fit morphologically into any major system of the body. Likewise physiologists had been perplexed by this structure for a long time, because the chemo-sensitive property of the carotid body could not be understood before circulatory and respiratory regulation had become sufficiently known.

Nevertheless, this organ is far from being fully discovered. There still exists disagreement as regards its microscopical anatomy and embryological development. For example, Meijling[24] holds the view "that the glomus cells are peripheral, small autonomic ganglion cells which are arranged as a syncytium and which are connected with the nerve endings by a fine pericellular apparatus."

Smith,[34] Watzka,[41] and Adams,[1] on the other hand, confirmed the presence of chromaffin cells, but noticed the great variation that exists in the number of such cells in different species. According to Smith and Watzka, the amount of chromaffin tissue depends

upon the degree to which the sympathetic participates in the formation of the organ, while nonchromaffin tissue allegedly derives from the glossopharyngeal and vagal nerves. To this one might add that the differences in the content of chromaffin cells may also be partly accounted for by differences due to the functional state of these cells. This latter interpretation is supported by the observation of Kohn[20] who noticed that "the cell bodies appear in the most variable shades, from faint yellow to deep yellow brown after the application of a simple solution of potassium dichromate." In recent electron microscopical studies of the carotid body, Duncan and Garner[11] found "most glomus cells in direct contact with each other without discernible extra cellular material. The glomus cells possess long processes which are interdigitated with similar processes of other cells. . . ." This finding certainly bears out the concept of Meijling[24] who emphasized the syncytial character of the glomus cells. In addition to the usual intra-cytoplasmic detail of individual glomus cells, Duncan and Garner[11] regarded as their most interesting observation the "minute droplets of high electron density" which indicate the presence of "highly labile cytoplasma." However, these workers could not affix any specific significance to these particles. To sum up, it appears that the microscopical anatomy of the cellular elements of the carotid body is by no means fully explored. And, what is more, the mechanism by which the "glomus cells" accomplish the recording of subtle changes of the tension of blood gases, and the transformation of these alterations into a nerve stimulus, is almost wholly obscure in terms of modern cytochemistry and ultrastructure.

ACKNOWLEDGMENT

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Notes and Events

Edited by Dorothy M. Schullian*

A Lesser Tercentenary
William London's CATALOGUE OF THE MOST VENDIBLE BOOKS IN ENGLAND *(1657)*

In 1957 there fell to be celebrated the tercentenary of "an important incident in the earlier annals of English bookselling."[1] This event was the publication of William London's *A catalogue of the most vendible books in England, orderly and alphabetically digested* (see Fig. 1). There had of course been earlier ones commencing with Andrew Maunsell's *Catalogue of English printed bookes.*[2] But London's catalogue was as he himself claimed—and still is as Sir William Osler confirmed—*opus sine exemplo.*[3]

This is not only because of its wide scope—the first edition contained 3,096 titles—but especially because of its prefatory matter, which made it the first bookseller's catalogue with a "bibliographical guide in the choice of books."[4] It is made up of three separate pieces, each almost a complete essay in itself. The first is a dedicatory epistle "To the Gentry, Ministers of the Gospel and others. Of a Peculiar Choice To the Wise, Learned and Studious in the Northern Counties of Northumberland, B^ppk of Durham, Westmerland and Cumberland," in which he gave his chief reason for compiling the catalogue: "seeing learning and knowledg are such Real things, as need no other props to support them but what is cut out of themselves; and also that this design I have undertaken, is to sow knowledg, which the whole Nation may reap, a better medium to effect it then by reading Books I know not: and to let all know what Books are daily prest for their service, seems to me as good an expedient to follow it as any." In the second dedicatory epistle "To the Most Candid and Ingenious Reader" he wrote wittily: "Much of the ignorance in many places may be attributed to the want of Books, but in this Nation for want of their use; and many a good Book lies asleep as not known . . . and as many Books are Still-borne, so no few are stifled in the sheets, and never come to be covered from the injury of forgetfulnesse." Together the two epistles make up 16 pages. The third essay, which extends to more than 48 pages and makes the book unique, is a scholarly "Introduction To the Use of Books: In a short Essay upon the Value and Benefits of *Learning* and *Knowledge*" prefixed "to baite the entrance" to "this Catalogue loaden

* Cleveland, Ohio.

1 Growoll, Adolph, *Three centuries of English booktrade bibliography, . . .* also a list of the catalogues &c., published for the English booktrade from 1592-1902, by Wilberforce Eames. New York, Published for the Dibdin Club by M. L. Greenhalgh, 1903, pp. 42-50.

2 J. Windet (pt.2, J. Roberts) for A. Maunsell, 1595, STC 17669.

3 *Bibliotheca Osleriana.* Oxford, Clarendon Press, 1929, No. 7179.

4 Hotten, J. C., Old English booksellers. *Notes and Queries,* 1859, 2d series, *8,* 182-184.

with Riches . . . which may probably pull in some to seek after Knowledg." "Such an excellent treatise," wrote Dibdin,[5] "has never since accompanied any bookseller's catalogue," and he found its style and content reminiscent

A
CATALOGUE
OF
The moſt vendible Books in *England*,
Orderly and Alphabetically Digeſted,
Under the Heads of
Divinity, Hiſtory, Phyſick and Chyrurgery, Law, Arithmetick, Geometry, Aſtrology, Dialling, Meaſuring Land and Timber, Gageing, Navigation, Architecture, Horſmanſhip, Faulconry, Merchandize, Limning, Military Diſcipline, Heraldry, Fortification and Fire-works, Husbandry, Gardening, Romances, Poems, Playes, *&c.*
WITH
Hebrew, Greek and Latine
for Schools and Scholars.

The like Work never yet performed by any.

Alſo, All ſorts of Globes, Mapps of the World or in Parts, either Kingdoms, Provinces or particular Counties; French and Duch Pictures and Landskips; Paper of all ſorts from 5ˢ to 5ˡᵇ a Reame: The beſt perfumed India, and Engliſh Wax, *&c.*

All to be ſold by the Author at his Shop in *New-Caſtle.*

Varietas Delectat.

LONDON, Printed in the Year 1657.

FIG. 1. Title-page of the rare first edition of William London's *Catalogue*, 1657.

of Sir Thomas Browne. Growoll[6] considered it "not unworthy to rank with the Bishop of Durham's (Richard de Bury) 'Philobiblion'" and lamented that it was so little known.

In the catalogue proper the books are listed alphabetically and are classified by subject as follows: "Divinity" (1,632); "History With other

[5] More, Thomas, *Utopia*, edited by T. F. Dibdin. London, Miller, 1808, vol. 2, p. 284*n*.
[6] *Op. cit.*

Pieces of Humane Learning Intermixed" (468); "Physick and Chyrurgery" (145); "Common and Civil Law" (146); "Mathematicks" (227); "Romances Poems and Playes" (250); "Hebrew, Greek, and Latin" (228). The "Titles of all Books are . . . at large . . . for a full Title tels us the purport and intent of the Books, whereby we may not be deceived."

The books are not distinguished by date of publication, but "Such Books as have been printed from the year 1650, to 1655, have this Charracter*, and you are led by the ☞ to all such as are come forth since." Those without any distinguishing mark were published before 1650. A specimen page is illustrated (Fig. 2), chosen because on it are advertised the works of William Harvey who died in the year the book was published.

The first edition is very rare. Only three copies are recorded in major libraries,[7] and one is known to us in private hands. This is perhaps the reason why the much commoner second edition of 1658[8] (see Fig. 3), not acknowledged as such in title or text, is often mistaken for the first. It collates identically with the first edition apart from having a new title page and at the end 5 leaves carrying a "Supplement of New Books, Come forth since *August* the first 1657. till *June* the first 1658." This lists 106 new books, 8 medical, and was compiled in fulfilment of a promise made in the first edition to add "an annual Supplement of all new Pieces that are prest into the service of this Commonwealth."

In 1660 London added a second and last supplement, of 12 leaves: *"A CATALOGUE OF New Books, by way of Supplement to the former. BEING Such as have been Printed from that time, till Easter-Term, 1660.* Printed by A.M. and are to be sold by Luke Fawn at the Parrot in Pauls Church-yard, and Francis Tyton at the Three Daggers in Fleetstreet. 1660."[9] It is identified as having been issued by William London by the signature "W.L." at the end of his brief address "To the reader." Its 396 titles include 20 new medical works, and among the authors are Sir Thomas Browne, Walter Charleton, Sir Kenelm Digby, Nathaniel Highmore, and Thomas Willis.

Unfortunately almost nothing is known about London's life, not even his dates of birth and death. He is first heard of in 1649 when his name occurs in connexion with a lease, and in 1652 he is recorded as having a stationer's shop "by the bridge."[10] W. H. D. Longstaffe[11] records three books dealing with religious controversies either printed for or sold by him in 1653, and the *D.N.B.* credits him with one other in 1655. Henry R.

7 Wing L.2849, Bodleian and Cambridge University; the National Union Catalog at the Library of Congress locates a copy at the University of Pennsylvania Library, and Mrs. Flora D. Colton, Reference Librarian there, adds that it is in the Rare Book Room.

8 Wing L.2850, 11 copies.

9 Wing L.2848, 5 copies.

10 *Extracts from the Newcastle-upon-Tyne Council Minute Book, 1639-1656.* Newcastle-on-Tyne Records Committee, 1920, pp. 110, 137.

11 *Memoirs of the life of Mr. Ambrose Barnes.* Surtees Society, 1886, p. 571.

Plomer[12] states that he was active in the Bridge Foot district of Newcastle-on-Tyne between 1653 and 1660 and that he issued several books against Quakers which were printed for him by Stephen Bulkley of York. J. Clephan[13] recorded one other fact about him, that he served with his

. *Phyſick and Chyrurgery.*

☞ The French and Engliſh Cooke, for exact making all ſorts of paſta, paſties, Florentines, *&c.* ordering of French, Span. and Ital. kickſhawes, dreſſing, fleſh, fowle and fiſh; with admirable ſawces. 12°.

* Dr *French.* The Art of diſtillation, treating of the choiceſt ſpagericall preparations, performed by way of diſtillation; deſcribing alſo the furnaſes and veſſels uſed by Chymiſts; with the Anatomy of gold and ſilver. 4°.

*—The *Yorkſhire* Spaw, or a Treatiſe of four Medicinall Wels, viz. the Spaw or *Vitrilone* Well, the ſting or ſulpher, the droping or purifying, and S^t *Magnus* Well in *Yorkſhire*; their cauſes, virtues, and uſe. 12°.

G.

M^r *Gerard*'s Herball, or the generall Hiſtory of plants. *folio.*

The Garden of Health, ſundry rare and hidden virtues of all kinds of ſimples and plants, with their uſe for the health of mans body. 4°.

* M^r *Glauber.* A deſcription of new philoſophicall Furnaſes, or the art of diſtilling, in five parts; of the tincture of gold, or the true *Aurum potabile*; with the firſt part of the Minerall Work. 4°.

H.

*THe *Anatomicall Exerciſes* of Dr *W. Harvey*, Phyſician to the Kings moſt excellent Majeſty, concerning the motion of the heart and blood, with Dr *de Back* of *Rotterdam*, his his diſcourſe of the heart. 8°.

The ſame Lat. 12°.

*—Anatomicall exercitations concerning the generation of living creatures, with particular diſcourſes of Births and conceptions. 8°.

*—*Exercitationes, de generatione animalium, quibus accedunt quadam de partu; de membranis ac humoribus uteri & de conceptione.* 12°.

☞ Dr *Hamand.* Ourography, or ſpeculations on the excrements of Urin, with the diſtinctions, cauſes, colours, and contents thereof, and other ſymptoms obſerved in nature; with a philoſophicall diſcourſe of the colours of Urin; with the art of mixing them according to quantity, number, and weight. 8°.

The *Haven of Health.* 4°.

* An *Hermeticall Banquet* dreſt by a Spagericall Cooke, for the better preſervation of the Microcoſme. 8°.

K.

THe *Lady of Kent*; A choice mannuall of rare and ſelect ſecrets in Phyſick and Chyrurgery, with the rare virtues of the *Gaſcoin* powder, and *Lapis contra Tarvam*, with exquiſite waies of preſerving, conſerving, candying, *&c.* 24°.

L.

☞ THe *Ladies Cabinet* enlarged and opened, containing many rare and rich Ornaments of preſerving, conſerving, candying, and phyſick, chyrurgery, cookery, and huſwifry, with waters, oyls, *&c.* by

A 8 the

FIG. 2. A page from the medical section of the *Catalogue* advertising works by William Harvey.

12 *A dictionary of the booksellers and printers who were at work in England, Scotland, and Ireland from 1641 to 1667.* London, Bibliographical Society, 1907, pp. 119-120.

13 William London, Newcastle Bookseller. *Archaeologia Aeliana*, 1896, *n.s. 11*, 227-228.

brother John on the Four-and-Twenty of Gateshead from 1658 to the Restoration.

Despite the lack of knowledge about William London the man, his "Introduction to the use of books" lives on as one of the most entertaining

A

CATALOGUE

OF

The moſt vendible Books in *England*,

Orderly and Alphabetically Digeſted;

Under the Heads of

Divinity, Hiſtory, Phyſick, and Chyrurgery, Law, Arithmetick, Geometry, Aſtrologie, Dialling, Meaſuring Land and Timber, Gageing, Navigation, Architecture, Horſmanſhip, Faulconry, Merchandize, Limning, Military Diſcipline, Heraldry, Fortification and Fire-works, Husbandry, Gardening, Romances, Poems, Playes, *&c.*

WITH

Hebrew, Greek, and Latin Books,

for Schools and Scholars.

The like Work never yet perfotmed by any.

Varietas Delectat.

LONDON,

Printed in the Year 1658.

FIG. 3. Title-page of the second edition of William London's *Catalogue*, 1658.

essays on bibliophily, while his catalogue proper continues to whet the bookcollector's appetite, and in these lean days may even help to provide him with sustenance and solace—an effect enhanced by the absence of prices.

RICHARD A. HUNTER
JOHN F. FULTON

Salus and Valetudo

During the Roman Republic three men were in charge of the production of coinage each year. These men were young and at the beginning of their careers. Since they were free to choose the subjects to be represented on the coins which they issued, the Roman republican coins of the commonest silver denomination—the *denarius*—are conspicuous for the variety of pictures shown on both sides (obverse and reverse). Usually on the obverse there appeared the head of a deity, as on the denarii of Manius Acilius shown here (PLATE, nos. 1-3).[1] It is not always easy to name the deity to whom the head belongs, for the deity is seldom mentioned on the coin and the head is not always accompanied by identifying attributes. Hence we are grateful to Manius Acilius for identifying his goddess—the inscription ("legend" in numismatic parlance) SALVTIS tells us that she is Salus, the goddess of Well-Being or Health.

The most interesting feature of these denarii of Manius Acilius is the fact that Salus has a counterpart on the reverse of the coins—a standing goddess leaning on a column and holding a serpent. The abbreviation VALETV identifies her as "Valetudo." Valetudo, like Salus, means Health or Well-Being.[2] Why did Acilius place on his coins *two* different goddesses of health, as the two different names make clear? Why did he call the one on the obverse "Salus," the one on the reverse "Valetudo?" The answer is evidently to be found in the manner of representing the goddess on the reverse of the coins. She is holding a serpent. The serpent was the chief symbol of the Greek goddess of health Hygieia, as the serpent-staff was the symbol of her male counterpart Asklepios. "Valetudo" is the name which was used here to translate the Greek "Hygieia" into Latin. The goddess on the obverse, on the other hand, is the Roman Salus. A temple had been built and dedicated to Salus in Rome at the end of the fourth century B.C. "Salus" was a concept broader than "good health" and was applicable to the condition of the State, or Res Publica. Hence the goddess was to appear in various forms and with various attributes on the Roman imperial coinage, where abundant pictorial representations of her can be found. Eventually all other forms, with rare exception, gave way to one which showed Salus feeding a serpent; in other words, for purposes of representation on coins, Salus became almost completely identified with Hygieia. This had happened by the end of the second century A.D. The coins of Manius Acilius had been struck over two centuries earlier when the Romans could still be conscious of a difference between their concept of Salus and the Greek Hygieia.[3]

We want to know of course why Acilius chose to place the Roman and Greek goddesses of Health on his denarii. According to the historian

[1] Coins of Acilius are listed in Horatio Robinson Storer's *Medicina in nummis* (Boston, 1931), pp. 43-44.

[2] The words "salus" and "valetudo" occurred together in an old Latin prayer quoted by Cato the Censor in his treatise on agriculture.

[3] An instance of Hygieia's being called "Salus" appears in the historian Livy's account of the year 180 B.C.

Mommsen, the reason may perhaps be found in a passage in the twenty-ninth book (§12) of the *Naturalis historia* written by Pliny the Elder, who died during the famous eruption of Mt. Vesuvius in 79 A.D. On the authority of the historian Cassius Hemina, Pliny states that the first physician to come to Rome arrived from the Peloponnesus in 219 B.C. This man's name was Archagathus, son of Lysanias. He was given citizenship *(ius Quiritium)* and an office was purchased for him *in compito Acilio,* "at the cross-roads of the Acilii." It is not known why this location, which is mentioned also in a Latin inscription recording some religious rites (*Corpus Inscriptionum Latinarum* VI, 32482), bore the name of the family of the Acilii: one assumes that it was the site of a residence of theirs. But it has been conjectured from the story recorded by Pliny that the *gens Acilia* claimed the credit for bringing Archagathus to Rome. In any case, the Greek doctor was established at a corner in Rome which bore their name. It seems reasonable that when a member of the Acilia family became a member of the board of three moneyers (III VIR on the coins), he chose for his coins medical types to be engraved on his obverse and reverse dies because the first Greek medical practitioner in Rome resided on "Acilius Square!" The silver coins struck in Rome by Acilius may not be his only pieces with medical associations. Some bronze coins which have been assigned to Corinth and bear the name of Manius Acilius have for their reverse type the serpent-staff of Asklepios, the Greek god of Health.

Pliny's story, then, suggests a plausible reason for the appearance of two goddesses of health, one Greek, one Roman, on the coins of Manius Acilius —commemoration of the coming to Rome of a Greek physician in the last quarter of the third century B.C. If Acilius was indeed proud of a connection between his family's name and the appearance of a Greek doctor in Rome at the end of the third century B.C., medicine at Rome must have been in better repute in his time than in the days of Archagathus. For although the doctor was very well received at first, says Pliny (§13), his cutting and burning soon earned him the name of carnifex—butcher! One can learn from Cato—an arch conservative who was opposed to Greek culture—how the medical art and all doctors fell into bad repute. Cato was only five years old when Archagathus came to Rome. Whatever the influence of his writings on the medical profession, Cato's public service in restoring the State to health earned for him a statue in the temple of Salus ("Hygieia," Plutarch, *Cato Maior* 19). Pliny quotes Cato at length, and at this point it is well to break off our story, pausing only to correct certain errors which have appeared in some modern medical accounts of the coins of Acilius. The "first physician" at Rome has wrongly been identified with Acilius himself, the moneyer, or with an older member of his family. Not only is "Acilius" the wrong name for "Archagathus" here but the date of Acilius the moneyer is much later than the time of Archagathus and is believed by numismatists and historians to have been close to the middle of the first century B.C. In fact our Acilius is sometimes identified with an officer of

FIG. 1. Denarii of Manius Acilius at The American Numismatic Society. 1. Actual size and enlargement. 2 and 3. Enlargements (2 diam.) (Photographs courtesy of The American Numismatic Society.)

Julius Caesar's. If Acilius's coins have reference to Archagathus's arrival in Rome in 219 B.C., they merely commemorate it. Finally, Acilius's first name or *praenomen* has been given as *Manlius.* Manlius is a family name or *nomen,* not a praenomen. Acilius's praenomen was Manius, abbreviated M/ to differentiate it from the more common M(arcus).

ALINE ABAECHERLI BOYCE

Early Acceptance of Lavoisier's Theories in Holland

In view of the interest in Lavoisier which was created a few years ago by the appearance of an extensive bibliography of his works,[1] it may be justifiable to record here a publication which has some significance in that connection, and to sketch briefly its background history. In the years 1785 and 1787 respectively, at Haarlem in Holland, there appeared in two parts the description of an electrical machine, still on view today, and an account of the experiments undertaken with it. This was the largest electrostatic generator built in the 1770's by the English instrumentmaker John Cuthbertson,[2] who was working in Amsterdam for Martinus van Marum,[3] the director, librarian, and chief experimenter of the Teyler Museum at Haarlem.[4] With this equipment, which is celebrated for its size, history, and workmanship, van Marum conducted many ingenious, well-arranged experiments. Most of his research was related entirely to electrical problems. But van Marum was also greatly interested in chemistry and set himself the task of establishing a relationship between electricity and chemistry. He was one of the first, if not the first, to demonstrate the chemical action of electricity.[5]

Van Marum had been a phlogistonist until 1785; about that time he made a trip to Paris, where he was able to witness the success of chemical experiments performed there by Lavoisier and his collaborators. It should be recalled that Lavoisier and Meusnier[6] were experimenting during those years on the decomposition and recomposition of water. Their work on this subject goes back to 1783,[7] and in February 1785 they carried out a large-scale synthesis of water under the supervision of the *Académie Royale*

1 Denis I. Duveen and Herbert S. Klickstein, *A bibliography of the works of Antoine Laurent Lavoisier, 1743-1794,* London, 1954. This work will be cited here as D. & K.

2 John Cuthbertson (dates of birth and death not known) was called the "philosophical instrumentmaker" (Paul F. Mottelay, *Bibliographic history of electricity and magnetism,* London, 1922, p. 230). He invented several instruments, such as a balance electrometer and an apparatus for the oxidation of metals. Already in 1769 he had published an interesting work on electricity and magnetism.

3 Martinus van Marum (1750-1837), a graduate in medicine and botany from Groningen in 1773, first practised as a physician at Haarlem until he turned to general science and became in 1778 director of the Teyler Museum, which institution he served for 60 years.

4 The Teyler Museum had been established from funds left by the Haarlem merchant, Peter Teyler van der Hulst, in 1778.

5 Fritz Ferchl-Mittenwald, *Chemisch-Pharmazeutisches Bio- und Bibliographikon,* Mittenwald, 1937, p. 344.

6 Jean Baptiste Marie Charles Meusnier de la Place (1754-1793).

7 See D. & K., nos. 58, 64.

des Sciences and in the presence of many leading scientists.[8] It must have been these experiments which first caused van Marum to doubt the tenability of the traditional phlogistic theories and to decide on undertaking some further research of his own. They finally convinced him, in fact, of the correctness of Lavoisier's revolutionary doctrines. His conversion was so complete that he felt called upon even to become their apostle among his Dutch countrymen by pointing out that the discoveries and innovations of the great Frenchman were founded on experience, and provided clear, satisfactory, simple explanations for natural phenomena which chemistry had not been able to clarify before.

The construction of this electrostatic generator, which was so extraordinary for the time, and the investigations which it made possible led van Marum to publish in 1785 his *Description d'une très grande machine électrique, placée dans le Muséum de Teyler à Haarlem, et des expériments faits par le moyen de cette machine,* or with the title rendered into Dutch, the *Beschryving eener ongemeen groote Electrizeer-Maschine, geplaatst in Teyler's Museum te Haarlem, en van de Proefneemingen met dezelve in 't werk gesteld.* This was followed two years later by the *Première continuation des expériences faites par le moyen de la machine électrique Teylerienne,* or in Dutch, the *Eerste Vervolg der Proefneemingen, gedaan met Teyler's Electrizeer-Maschine.*[9] These two beautiful quarto volumes were issued as official publications of the Teyler Museum, as the "Derde" and "Vierde Stuk" respectively of its "Verhandelingen," and were printed by the well-known press of Jean Enschedé et fils and Jean van Walré. As the bilingual titles indicate, the text is given in French and Dutch on opposite pages. It is illustrated with 17 fine, carefully engraved plates, seven of which are greatly oversize and folded, and nine colored. They show the machine in its entirety and some of its separate component parts as well as sparks produced by it and pictures, in colors, of calcined metals.

According to Dibner,[10] one of van Marum's main purposes with this powerful generator was to confirm Franklin's electrical one-fluid theory.[11] Another and to him very important aim, however, was to find out whether the passage of an electrical spark through the air caused part of this air to combine with "phlogiston." It was the results that he obtained along these lines which made van Marum a convert to Lavoisier's new chemical theories. When he set down the account of his investigations, van Marum must have realized that this new chemistry was still practically unknown in Holland. Out of this consideration he was prompted to add to the second part of his work an appendix (pp. 235-266) which offered to his Dutch fellow scientists

[8] *Ibid.*, no. 93.

[9] Further continuations never appeared.

[10] Bern Dibner, *Early electrical machines,* Norwalk, Conn., 1957, pp. 43-49, where van Marum's work is described in detail, and where the beautiful large plate of the machine and pictures of some of its parts are reproduced.

[11] Both Franklin and Volta later recognized the "proof" of the unitary theory provided by van Marum.

an abstract of Lavoisier's theories under the caption "Schets der Leere van M. Lavoisier, omtrent de zuivere lucht van den dampkring, en de vereeniging van derzelver grondbeginzel met verschillende zelfstandigheden."[12]

This abstract, in contrast to the main part of the work, is given in Dutch only, without the French translation, since van Marum was well aware of the fact that Lavoisier, at that time, did not need any introduction to French scholars. It is based first of all on Lavoisier's *Opuscules physiques et chymiques,* Paris, 1774,[13] and on the most important scientific papers published by Lavoisier between 1774 and 1785.[14]

Van Marum was also familiar with the work of others in the same field, such as Priestley, Cavendish, Blagden, Volta, Laplace, Meusnier, Berthollet, de Morveau, Ingenhousz, Monge, Senebier, etc., to all of whom he occasionally refers by name, assigning to each his due place in the story of these discoveries. In this connection it may perhaps be mentioned that the *Méthode de nomenclature chimique,* published by Lavoisier, de Morveau, Berthollet, and Fourcroy in 1787,[15] does not yet figure in van Marum's text of the same year. This, then, appears to be the first instance on record of the acceptance of Lavoisier's theories in Holland, for the first Dutch translations of any of his writings[16] bear the dates 1791 and 1800.

It is not without interest to report in closing that the work by van Marum described above was translated almost immediately into German by an anonymous translator under the title *Beschreibung einer ungemein grossen Elektrisir-Maschine und der damit im Teylerschen Museum zu Haarlem angestellten Versuche,* Leipzig, 1786 (part I), which was followed in 1788 by the second part, bearing the same general title with the addition of the words "Erste Fortsezung." The appendix relating to Lavoisier appears here on pages 47-72 of the second part, with the "Abris des Sistems des Herrn Lavoisier über die reine Luft der Atmosfäre und die Vereinigung ihres Grundstofs mit verschiedenen Substanzen" on pages 48-72. The

12 This abstract of Lavoisier's doctrine regarding the pure air of the atmosphere and its combination with various substances is preceded, on pp. 233-234, by a general introduction, the whole section being entitled "Aanhangsel, dienende ter opheldernig van eenige zaaken, in dit stuk voorkomende."

13 The date of publication is given by van Marum erroneously as 1773. See D. & K., no. 121.

14 There are among others references to the following papers by Lavoisier: "Expériences sur la respiration des animaux, et sur les changemens qui arrivent à l'air en passant par leur poumon," *Mém. Acad. R. Sci.,* 1777 (1780), 185-194 (D. & K., no. 38); "Mémoire sur la combustion des chandelles dans l'air atmosphérique, et dans l'air éminemment respirable," *ibid.,* 195-204 (D. & K., no. 39); "De la combinaison de la matière du feu avec les fluides évaporables, et de la formation des fluides élastiques aëriformes," *ibid.,* 420-432 (D. & K., no. 43); "Considérations générales sur la nature des acides, et sur les principes dont ils sont composés," *Mém. Acad. R. Sci.,* 1778 (1781), 535-547 (D. & K., no. 49); *Mém. Acad. R. Sci.,* 1780 (1784), 355-408 (D. & K., no. 55); "Mémoire dans lequel on a pour objet de prouver que l'eau n'est point une substance simple, un élément proprement dit, mais qu'elle est susceptible de décomposition & de recomposition," *Mém. Acad. R. Sci.,* 1781 (1784), 468-494 (D. & K., no. 64); "Mémoire sur la combinaison de l'air nitreux avec les airs respirables, & sur les conséquences qu'on en peut tirer, relativement à leur degrée de salubrité," *Mém. Acad. R. Sci.,* 1782 (1785), 486-491 (D. & K., no. 69).

15 D. & K., no. 126.

16 D. & K., nos. 178, 179.

Lavoisier references in this German version are not to the French originals, as quoted above, but to their German translations by Christian Ehrenfried Weigel in the first three volumes (1783-1785) of the collection of Lavoisier's writings published by Weigel under the title *Herrn Lavoisier physikalisch-chemische Schriften,*[17] which comprises the *Opuscules physiques et chymiques* in the first volume followed by most of Lavoisier's separately published papers and memoirs, and which played such an important part in the history of Lavoisier's chemistry in Germany.[18]

MARTHA ALEXANDER

17 D. & K., no. 335.

18 The present note is based on copies of both the Dutch-French original of van Marum's work and its German translation, which are now in the possession of Henry and Ida W. Schuman, of New York City, dealers in rare books relating to the history of medicine and science. The author of this note has been associated with them for long years; in addition, she assisted the Messrs. Duveen and Klickstein in the preparation of their Lavoisier bibliography.

A Letter from Lord Lister

The relationship between Lord Lister (1827-1912) and James Matthews Duncan (1826-1890) has been briefly mentioned on several occasions, but there has been little direct information regarding it beyond a letter from Matthews Duncan to Lister dated 11 November 1889 which was printed by Sir Rickman Godlee.[1] When Lister first arrived in Edinburgh, Duncan was assistant to Sir James Young Simpson, with whom he had been associated in the discovery of the anaesthetic properties of chloroform in 1847.[2] Simpson died in 1870, and Duncan hoped to succeed him in the Chair of Midwifery but was passed over in favour of Simpson's nephew. Seven years later Matthews Duncan was invited to St. Bartholomew's Hospital, London as Physician-Accoucheur and Lecturer in Midwifery, and took up his appointment in 1877, a few months after Lister had moved to London.

Matthews Duncan was beloved by his patients despite a rather rough exterior and was even more successful in practice in London than in Edinburgh. His reputation brought him many honours, and he was the author of several important publications. He died suddenly at Baden-Baden on 1 September 1890, and eventually many of his personal belongings were deposited in the Medical College Library, St. Bartholomew's Hospital. These include several notebooks, manuscripts, and certificates; there are also numerous letters from distinguished contemporaries and a collection of correspondence from Queen Victoria, but not in her handwriting. One bound volume includes messages of condolence, addressed to Mrs. Matthews Duncan on the death of her husband, from Queen Victoria, Lord Rosebury, Sir William Jenner, Sir Norman Moore, and Sir Henry Acland. Among them is the following letter from Lister:

1 Godlee, Sir Rickman John. *Lord Lister,* London, 1917, p. 611.

2 Thornton, John L. The relationship between James Matthews Duncan and Sir James Simpson. *Medicine Illustrated,* 1949, 3, 261-5.

Riva,
Lago di Garda,
21st Sept. 1890.

Dear Mrs. Duncan,

A letter from Lucy Syme has told us of the great affiction [*sic*] that has befallen you. I cannot express the grief with which I have received this sad news.

In Dr. Duncan I have lost my best friend in London, and I hardly know how to realize that he is gone. And to the whole profession in the metropolis his loss is simply irreparable.

But we have the satisfaction of knowing that he exercised an influence for good the effect of which will be enduring. The thought of this, and the sympathy of multitudes to whom he was dear, will, I hope, alleviate in some degree this almost crushing sorrow.

May He in whom Dr. Duncan believed sustain you under it, is the earnest desire of

Yours very sincerely

Joseph Lister.

Riva
Lago di Garda
21st Sept 1890

Dear Mrs Duncan

A letter from Lucy Syme has told us of the great affliction that has befallen you. I cannot express the grief with which I have received this sad news.

In Dr Duncan I have lost my best friend in London, and I hardly know how to realize that he is gone. And to the whole profession in the metropolis his loss is simply irreparable.

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May He in whom Dr Duncan believed sustain you under it, is the earnest desire of

Yours very sincerely

Joseph Lister

Letter from Lord Lister to Mrs. Matthews Duncan. (Photograph by courtesy of Dept. of Medical Photography, St. Bartholomew's Hospital, London.)

The text was reproduced in a privately printed biography of Matthews Duncan which was prepared by his sister[3] for the family and which appears to be rare. The letter supplies a further link in the association between Lord Lister and James Matthews Duncan, two great contemporaries who obviously had vast admiration for each other's ability.

JOHN L. THORNTON

3 [Newlands (née Duncan), Isabella.] *James Matthews Duncan. A sketch for his family,* (1891), pp. 163-164.

A Case of Tuberculosis in the Roman Aristocracy at the Beginning of the Second Century

The letters of Pliny the Younger, nephew of the Pliny who wrote our first encyclopaedia, *The Natural History,* are in reality a series of essays which preserve an interesting picture of Roman society from about 79 to 109 A.D. Of several letters which eulogize prominent Romans at their deaths, there is one (VII. 19) written about 107 A.D. describing the death of Fannia, a noblewoman of high character and a close friend of Pliny's family. The letter tells of the writer's alarm at Fannia's illness, which

she contracted while nursing the vestal virgin, Junia, first voluntarily (for Junia is a relative) then at the order of the pontiffs.[1] For when the vestals, because of severe illness, have to leave the precinct of Vesta, they are entrusted to the care and guardianship of some matron. While Fannia was nursing her devotedly, she contracted the disease. She has continued fever, her cough gets worse day by day, she is very thin and weak. Still she is mentally alert, and her spirit does not flag, a spirit worthy of her husband Helvidius, and her father Thrasea.[2] In everything else she is failing to such an extent that I not only fear but grieve.

Pliny's description of Fannia's illness—a fever which continued though she had full possession of her faculties (not the sudden high fever with delirium of some other diseases), the cough and the growing weakness—identifies the ailment as tuberculosis. It had been contracted from a patient with the same symptoms who had not yet succumbed at the time when Fannia's death appeared certain; for Pliny wrote "she *is* [not she *was*] a relative."

It is interesting to conjecture how a priestess of Vesta, the most exalted and privileged position[3] to which a Roman woman could attain in her own right, might have contracted tuberculosis. There were six vestals. When a vacancy occurred in the group by death or by withdrawal, which was permitted after thirty years of service, a new priestess was chosen from among the daughters of the aristocracy. The choice was made from girls between

1 These had charge of the numerous public cults and ceremonies, among which that of the goddess Vesta and the hearth-fire of the state was prominent.

2 Famed as philosophers and statesmen who met death at the order of successive tyrannical emperors.

3 They had full control of their property, while as a rule women were under the guardianship of some male relative; they were also honored in various other ways.

the ages of six and ten both of whose parents were living. Good health and freedom from physical defects were also necessary qualifications of candidates. A girl whose parents were divorced was automatically disqualified.

The duties of the vestals were fairly arduous. They had to watch in turn and keep alive day and night the sacred fire which burned perpetually in the beautiful, but probably cold and drafty, open circular building in the Roman Forum. They also prepared certain sacrificial cakes from grain in the cumbersome manner prescribed by primitive Roman ritual. They had a prominent part in religious celebrations sacred to Vesta and other divinities. Some of these lasted a week at a time with a succession of processions and sacrifices regardless of unseasonable weather. The vestals appeared in public always wearing the elaborate coiffure and heavy robes which were prescribed by tradition but were decidedly cumbersome and uncomfortable.

The palace of the vestals in Pliny's time could not have been suitable for the care of an invalid, and it is not surprising that ailing vestals were sent to the houses of relatives. The structure[4] was built after the fire of Nero in 64 A.D., on the site sacred to Vesta from prehistory. The precinct was reconstructed twice in the following century, and the ruins now visible are of these later and more extensive structures. Careful study, however, shows much of the construction beneath. The rooms of our period were decidedly cold and damp, and were dark especially in inclement weather when the wooden shutters, the only protection for window openings, were closed. Ceilings were high, walls were of brick-faced and stuccoed concrete, floors were of stone. The house of the vestals which was constructed later under the Emperor Hadrian, himself a skilled architect, had hollow-tiled floors[5] through which passed heated air from a furnace. There were also double walls with a system of hollow jars[6] between, to prevent dampness from seeping into the rooms on the south side, where the building stood directly against the slope of the Palatine hill.

Adjoining the palace on the north and east were rows of small one-room shops[7] which belonged to and furnished an income to the establishment of the vestals. The proprietors of these shops and their families lived in a single room above each shop, which was reached by a wooden ladder or stair and was ventilated by one window in the front wall. This combination of shop and living quarters is found both in Rome, notably in the remains of the market of Trajan which was excavated in the 1930's, and in other ancient sites. Such crowded living conditions must have spread tuberculosis not only among the shopkeepers and their families but also among those who regularly came in contact with them.

[4] E. B. Van Deman, *The Atrium Vestae*. Washington, 1909. This is still the standard authority. I have studied the remains myself.

[5] *Op. cit.*, p. 27.

[6] *Op. cit.*, p. 32.

[7] Platner and Ashby, *A topographical dictionary of ancient Rome*. Oxford, 1929, p. 59, s. v. Atrium Vestae.

The conditions arising from the slave system in antiquity also contributed to the spread of tuberculosis, for even though individuals were in good health when taken in war or after being reared in more humane households, the crowded conditions which obtained, the low diet, and the hard work demanded by professional slave dealers, who transported these unfortunate humans to the centers of the slave markets, aided the spread of the disease from one member of a group to others. Pliny, who prided himself on his own humane treatment of slaves and freedmen, in another letter (V. 19) tells of an educated freedman who was found to be tuberculous after coming into his service.

It is reasonable to think that in the case of the vestal Junia, who was exposed to tuberculosis from association with tenants, tradesmen, or slaves connected with the house of the vestals, the effects of the disease became so severe during the activities of some great festival or celebration that she became too ill to perform her duties, and that she in turn transmitted the disease to the noble Fannia, who nursed her. Such a supposition reminds us that in antiquity, as today, tuberculosis was no respecter of rank.

ERNESTINE F. LEON

The Oldest Description of Orthopnea

One of the better known examples of popular religious poetry from ancient Egypt is the prayer of a certain Nefer-abu, who lived in the twelfth or thirteenth century B.C., to the tutelary goddess of the Theban Necropolis, Mertseger, who had sent him an illness to punish him for some sin, and then, after his penitence, had healed him.

He describes his affliction as follows: "I was in her hand by night as by day: I sat like the woman in travail upon the bearing-stool. I called upon the wind,[1] and it came to me not."[2]

The first editor of the text, Gaston Maspero,[3] had recognized this as a case of asthma. He missed, however, the true significance of the second sentence by interpreting it as a comparison with the pains of a woman in travail, whereas it describes specifically that most common symptom of asthma which is known today, as it was in ancient Greece, under the name of Orthopnea—defined by Webster's *Dictionary* as "a morbid condition in which respiration can be performed only in an erect posture."

WALTER FEDERN

1 Or "breath." The word *t!w* admits of either translation.

2 Battiscombe G. Gunn's translation, in *J. Egypt. Archaeology*, 1916, *3*, 86.

3 *Études de Mythologie et d'archéologie égyptiennes*, 1893, *2*, 407. The most recent editor, Jacques Vandier, confused it with Nefer-abu's blindness, of which we hear in a prayer which he addressed to Ptah (*Tombes de Deir el-Médineh. La tombe de Nefer-Abou*, Cairo, 1935, p. 75, with Pl. XXVII, 1). To Dr. Frans Jonckheere (*Chronique d'Égypte*, 1950, *25*, 218 f.), the symptoms of sleeplessness, pains, and dyspnea suggested a nonfatal snakebite, but his explanation does not account for the use of the specific term *hms* "sitting" (cf. James Henry Breasted, *The Edwin Smith surgical papyrus*, Chicago, 1930, *1*, p. 150), which implies a forced erect sitting position of the patient, and thus points to the interpretation proposed in this note.

The Library of Henry Pierrepont, First Marquis of Dorchester (1606-1680), F.R.C.P., F.R.S.

The Royal College of Physicians, London, opened on 29 May 1958 one of its more interesting exhibits made up of 34 items from the library of Henry Pierrepont, First Marquis of Dorchester who, at the time of his death, had a collection of more than 3,000 bound volumes, over 92 per cent of which survived the fire of London and the numerous moves which the library was forced to make before it became housed in quarters on Pall Mall East overlooking Trafalgar Square and facing the National Portrait Gallery. Henry Pierrepont, according to Charles Goodall's unpublished manuscript, "A Collection of College Affairs. 1680-1700," was born in 1606 and educated at Emmanuel College, Cambridge where John Harvard (1607-1638) had taken his M.A. in 1635. Since they were contemporaries and had a common interest in books, it would seem highly probable that John Harvard, even though a man of humble origin, knew Pierrepont who, in 1645, was created First Marquis of Dorchester.

Dorchester's life is not as well known as it deserves to be, and in view of the rich source materials, especially the Charles Goodall manuscript (No. 2 in the catalogue mimeographed for the exhibit by the Royal College of Physicians), the manuscript *Bibliotheca Marchionis Dorcestriae,* 1664 (No. 6 in the catalogue), and the actual books which belonged to the Marquis, one hopes that the life of this still somewhat obscure physician and book-collector will eventually be set forth in greater detail. On leaving Cambridge, he became M.P. from Nottinghamshire as Viscount Newark (1628-1629); in 1641 he entered the House of Lords as Baron Pierrepont, having succeeded his father, Robert Pierrepont, First Earl of Kingston, in the earlier title. After being created Marquis of Dorchester in 1645, he followed Charles I to Oxford. At this time he was studying both medicine and the Law. He became Fellow of the Royal College of Physicians in 1658, and in 1663 Charter Fellow of the Royal Society, which had been founded on St. Andrew's Day the preceding year (30 November 1662). His legal training permitted him to serve as Privy Councillor from 1660 to 1673. The last years of his life seem to have been unhappy, and it is recorded that he hastened his death through the use of medication of his own prescription.

Among the books in Dorchester's library are his cash book (1664-1726), a record that was continued after his death (No. 5), Joannes Kepler's *Prodromus dissertationum cosmographicarum,* Frankfurt, 1621 (No. 8), John Napier's *New logarithmes* [London] 1619 (No. 9), John Babington's *Pyrotechnia,* London, 1635, Pierre Borel on the telescope, The Hague, 1655, the English edition of Galileo's *Sidereus nuncius,* London, 1653 (an item now much rarer than either the Venice or the Frankfurt edition of 1610), and Euclid's *Elements of Geometrie,* London, 1570 (No. 16). The catholicity of the Marquis's taste is further illustrated by Geoffroy Tory's

L'art et science de la vraye proportion des lettres Attiques, Paris, 1549, Guy de Chauliac's *Cyrurgia,* Venice, 1519 (No. 24), Robert Boyle's *Certain physiological essays,* London, 1661 (No. 25, accompanied, as are all the entries in this catalogue, by a useful note), Charles Estienne's *De dissectione,* Paris, 1545 (No. 26), and Henry Power's *Experimental philosophy,* London, 1664 (No. 29), which is the first book in English dealing with microscopical observations and which makes favourable comment on Harvey's "incomparable invention" of the circulation of the blood. Dorchester also appreciated the value and interest attaching to books printed by William Caxton, the first English printer, who is represented by Le Fèvre's *Historyes of Troye,* probably published at Bruges in 1473. The catalogue ends by listing the manuscript of a 14th century *Missale Romanum* (No. 33) and Virgil's *Opera,* Venice, 1486 (No. 34). The literary tastes of Dorchester were indeed catholic, and if the College is not now in a position to sponsor a life of this physician-marquis, one hopes, at least, that an annotated catalogue of his library will be issued to supplement the published catalogue of 1755 which seems to have become one of the rarities among the catalogues of great libraries.

J.F.F.

Historical Notes in the AMERICAN JOURNAL OF CARDIOLOGY

In January 1958 the American College of Cardiology inaugurated its official publication, the *American Journal of Cardiology,* which appears under the editorship of Dr. Simon Dack of New York City. The new periodical is intended for practising clinicians and is designed to assist them toward a broad and accurate knowledge of all matters related to cardiovascular disease. In addition to clinical memoirs, general reviews, and technical reports, the *Journal* is publishing a series of contributions illustrative of the development of cardiology. Each article in this series will contain an excerpt from a notable document dealing with some aspect of cardiovascular disease. Each will be accompanied by a brief introduction and by comment sufficient to place the text in its historical setting. No attempt will be made to reproduce materials which have appeared in the standard anthologies.

Articles already published are as follows:

Pulmonic Stenosis with Patent Interatrial Septum (Morgagni, 1761). January, 1958.

Rheumatic Carditis: Bouillaud and Some Unknown Irish Precursors. April, 1958.

Excerpts From a Lecture by Carl Gerhardt on Haemorrhagic Infarction of the Lungs (1875). June, 1958.

Mountain Sickness as Described by Fray Joseph De Acosta, 1589. August, 1958.

William Harvey Described by an Eyewitness (John Aubrey). September, 1958.

Ascites as Described by Aulus Cornelius Celsus (ca. A.D. 30)
October, 1958.

Descriptions of the Endocardium by Bouillaud (1835) and Bichat (1800).
December, 1958.

The following articles are scheduled for publication in 1959:

Early Impressions of Mediate Auscultation by James Clark (1819).
February, 1959.

Armand Trousseau: Lecture on Angina Pectoris.
April, 1959.

William Cullen on Dropsy, Anasarca and Hydrothorax.
June, 1959.

Morse K. Taylor on Heart Disease in the Civil War.
August, 1959.

Ramazzini on Diseases of Runners and Miners.
October, 1959.

Functional Heart Disease in the Civil War (Da Costa, 1871).
December, 1959.

Additional articles are at this moment in various stages of preparation and will appear in later issues of the same journal. It is the hope of the author and the editor that these notes will arouse interest in the historical development of cardiology and will stimulate at least a few cardiologists to undertake independent historical studies.

SAUL JARCHO

Guilhelm VIII, Seigneur de Montpellier

The seal of Guilhelm VIII, which was used on the letterhead of the Sixteenth International Congress of the History of Medicine, awakened among medical historians a curiosity concerning the contribution made by this William in the year 1180 to the study and teaching of medicine. The relevant privilege granted by him as sire of Montpellier is printed in Jean Astruc's *Mémoires pour servir à l'histoire de la Faculté de Médecine de Montpellier* (Paris, Cavelier, 1767), page 34. An English translation of the Latin text is furnished below. The document sounded, almost eight hundred years ago, a clarion call for academic freedom.

In the name of our Lord Jesus Christ, in the year 1180 from Incarnation and the month of January, I, William, by the grace of God Master of Montpellier, son of the Duchess Mathilda, for the public good and common advantage and my own benefit and that of Montpellier as a whole and of all my realm, do grant and vouchsafe perpetually before Lord God and the honorable men of Montpellier present and future and all the people that I will never, on entreaty or at a price or at the solicitation of anyone, give to any individual the exclusive permission or prerogative to lecture or conduct classes in the Faculty of Medicine at Montpellier, since it is entirely grievous and wrong to grant to one man alone monopoly in so excellent a science, and because fair play and justice prohibit this I will

in no wise give such permission for the future. This then is my order and my wish, and I commend and grant in perpetuity that all men, whoever they are and from wherever they come, shall conduct classes in medicine in Montpellier without any hindrance, and I enjoin upon all my successors not to dare to countermand this order.

The Bibliotheck, Volume 1, Number 3, 1958

A new journal, *The Bibliotheck,* which specializes in bibliographical notes and queries of Scottish interest, is being edited by L. Jolley and published from the University Library, Glasgow, by the Scottish Group of the University and Research Section of the Library Association.

The notes in the third issue of Volume 1 are indeed of Scottish interest. But since they are almost entirely devoted at the same time to medical history, and to important figures and events in it, they will find a wider welcome among medical historians everywhere. On pages 3-14 W. R. LeFanu provides a bibliography of the printed works of William Hunter which fills a long-felt want and which for accuracy, dependability, and usefulness will take its place beside his bibliography of Jenner. In a series on the records of medical and scientific societies in Scotland C. P. Finlayson discusses (pp. 14-19) records of nineteen societies which are preserved in the University Library, Edinburgh, and L. Jolley (pp. 20-27) those of the Royal College of Physicians of Edinburgh. Such guides are of inestimable value to anyone wishing information from archives. The editor also furnishes (pp. 27-36) a detailed examination, with two illustrations, of the portraiture of William Cullen. The main body of the notes closes with Isabel Brown's illuminating bibliography (pp. 37-41) of the several editions, 1735 to 1742, of *A short account of the Town's Hospital in Glasgow.* Briefer notes which are not on medical subjects follow, and finally some notices and reviews which include the announcement that the University Library has received by bequest of the late Professor T. K. Monro his Sir Thomas Browne collection, which contains 206 of the 207 items listed in Keynes's bibliography (Cambridge, 1924).

Editors in generalized fields who from time to time can furnish a specialized and unified treatment of this sort, which if delivered before a learned society would constitute a symposium, are greatly to be commended. The *Library Journal* acted similarly when it devoted the main portion of its August issue, 1958, to medical librarianship. Of all such journals let us say heartily, *"Crescant feliciter."*

James Parkinson

Dr. Arthur D. Morris, 100 Alderman's Drive, Peterborough, Northants, England, is collecting material for a biography of James Parkinson (1755-1824) of Hoxton, London, to whom we owe the classic description of shaking palsy. He will be most grateful to be informed of any autograph

or manuscript material by or relating to Parkinson in public or private collections.

A note by Dr. Morris on Parkinson appeared in *The Lancet,* 9 April 1955, 761-763, and on 17 September of that anniversary year he unveiled in St. Leonard's Church, Shoreditch, a memorial plaque to Parkinson (Journal, 1956, *11,* 107). Dr. Morris has demonstrated his interest also in Hoxton by his brochures *Hoxton Square and the Hoxton Academies* (Printed for the author by T. Davis & Co., 283 Hoxton St., N. 1, 1957, 11 pp.) and *The Hoxton Madhouses* (Goodwin Bros., March, Camb., 1958, [49] pp.).

Something New In Book Reviews

An Introduction To Surgery. Edited by David H. Patey, M.S. (Lond.), F.R.C.S. (Eng.) (Pp. 228+xi; illustrated. 17s. 6d.; student's edition 9s. 6d.) London: Lloyd-Luke (Medical Books) Ltd. 1958.

This useful little book is meant
For those on surgery intent,
To tell them what they ought to know
Before into the wards they go;
Within small compass, too, it packs
Much that the student often lacks,
And stresses well the "human touch"
Which to the patient means so much.
To every dresser then we say—
Read through this book without delay:
The hours in reading it you spend
Will pay a handsome dividend.

ZACHARY COPE

(From the *Brit. med. J.,* 18 October 1958, p. 958)

Collecting Old Catalogues of Scientific Instruments

It would be of historical interest to ascertain who first published a commercial catalogue of scientific instruments. Originally the scientist himself or his laboratory helpers, a technician or mechanic, built the needed instruments for research which were later on described and illustrated in reports of work in which the new instruments had been used. It was apparently only in the nineteenth century that methodical books were published, containing the pictures of the different instruments used for laboratory experiments or clinical investigations. E. de Cion, the pupil and collaborator of Carl Ludwig, published such a book, as did Tigerstedt later on. But even in the twentieth century many European scientists regarded the apparatus used in their laboratories as strictly confidential and a mechanic would rarely, if ever at all, receive from the chief permission to make for another laboratory or scientist a copy of any instrument he made for the laboratory at which he was employed. This was still the case, as I well remember, in the laboratory

of H. E. Hering, Jr. in Prague and Cologne at the beginning of this century and also in the laboratory of his friend Otto Frank in Munich. The latter was so suspicious of being unjustly treated and having his instruments copied that when, as a young assistant, I visited him with an introductory letter from his friend Hering, he did not even permit me to enter his laboratories, giving to my astonished question the explanation that so many outstanding scientists had stolen (that was his expression) his work and ideas that his laboratories were now "hermetically closed" to every visitor. Such a strange attitude did not of course prevent his own mechanic from copying and selling for good words and money the famous "Frank'sche Kapseln" to strangers interested in the work, but of course not with the knowledge and blessing of Frank.

By the end of the nineteenth century different mechanics had begun to open their own shops with the consent and wholehearted collaboration of the professor and began to sell scientific instruments. The most famous example is the small mechanical workshop of Zeiss in Jena which, with the collaboration, partnership, and finally ownership of Prof. Ernst Abbe, developed into the world-renowned Zeiss-Werke.

To mention another typical example: I have before me the 1909 catalogue of the famous firm of Fritz Köhler in Leipzig, specializing in physico-chemical apparatus. In 1897 Köhler entered the laboratories of Prof. Wilhelm Ostwald as a mechanic and was employed in 1898 by the Government as "Universitäts-Mechaniker." His first workshop was founded in 1897 with the consent and encouragement of Professor Ostwald. The first catalogue of Köhler was published in 1899, the second in 1900, and the third in 1902. This catalogue was reviewed in 1903 in the *Zeitschrift für Elektrochemie,* as a "valuable supplement" to the classical textbook of Ostwald-Luther, "Physico-Chemical Measurements." I was proud to receive in 1918 from the founder of the firm a bound copy of all their catalogues from 1909 to 1916. With the many pictures of instruments and actual photographs (for instance "Ostwald and van't Hoff in the laboratory in 1900" in the 1909 catalogue) they are an invaluable source of the history of science in the early nineteenth century. I doubt whether many of these catalogues have survived.

Next I turn to the bound copy of the 50th catalogue of the factory of scientific apparatus of E. Zimmermann (Leipzig and Berlin, 1928). It is a richly illustrated book of 344 pages which was distributed in numbered copies to interested research workers. On page 183 of this important source of the history of physiological apparatus the author emphasizes the experience of this firm based on fifty years (since 1878) of producing laboratory equipment.

Of great interest is the catalogue of Edelman in Munich (second edition 1908) with a richly illustrated description of the first Einthoven electrocardiograph placed on the market.

Remarkable also are the catalogues of the Harvard Apparatus Company in Dover, Massachusetts. The company was created in 1901 "for the advancement of laboratory teaching in physiology and the allied sciences." The excellent pictures and descriptions of apparatus in these catalogues are very informative and on a much higher level than most commercial sales-lists of a similar kind.

Most of these witnesses of the development of science and medicine are destroyed, and no library probably ever specialized in a collection of this type. I was therefore pleased when Dr. Fulton in accepting my small collection of such catalogues for the Yale Historical Medical Library decided to keep it as a unit which may be successively enlarged by old and new specimens.

BRUNO KISCH

Dr. Richard H. Shryock Honored

Richard H. Shryock, Ph.D., Professor of History at the University of Pennsylvania and Librarian of the American Philosophical Society, was inducted as an Honorary Fellow of the College of Physicians of Philadelphia, 5 November 1958, in recognition of his distinguished achievements as a medical historian. The College's roll of Honorary Fellows is limited to fifty, but the honor is accorded so rarely that Dr. Shryock's name is only the eighth currently on the roll.

Exhibition of Medical Records, British Records Association

The twenty-sixth Annual Conference of the British Records Association was held in London on Tuesday and Wednesday, 25th-26th November. The morning's proceedings opened with an excellent Exhibition of Medical Records, held by courtesy of the Royal College of Physicians in the College Library. This displayed a wealth of material, contributed by some thirty sources including libraries, hospitals, and record offices all over the country. Though it is perhaps invidious to single out special contributions, the material supplied by Lancashire, Bedford, and Essex showed the extent of those counties' resources, a fact commented upon in Mr. L. M. Payne's excellent introduction to the *Catalogue* (price 3s., including postage, from the Honorary Secretary, British Records Association, The Charterhouse, London, E.C. 1). The Exhibition covered some 400 years, from the late fifteenth to the middle of the nineteenth century, and fell into four broad groups, dealing with (1) the medical profession; (2) medical education; (3) medical practice; and (4) care of the sick. Among the important items displayed were the first Ordinance Book of the Fellowship of Surgeons, dated *c.* 1492-7; the Charter of the College of Physicians, 1518; the Exemplification of the Ordinances of the Amalgamated Company of Barber-Surgeons, 1530; and the first Minute-Book of the Court of Assistants of the Society of Apothecaries, 1617-51. We were reminded by further items of one lesser-known

aspect of the church's activities, namely, the licensing of doctors and midwives by the Bishops. Among these was a licence for a female surgeon dated 1673. (A similar licence of 1612 is actually on record.) From licensing, logically, we moved to Quacks, the seventeenth-nineteenth centuries being particularly rich.

In the second section, medical education, we saw among others the famous 1564 Charter for Anatomies (four bodies a year!); Harvey's Diploma from the University of Padua; proposals for the establishment of schools of anatomy and surgery in London (*c.* 1734); students' lecture notes and registers of students. The third section, medical practice, proved perhaps the most interesting. We were shown fifteenth-century receipt books, account books, precautions against the plague, coroners' reports, and a doctor's case-book of 1636-54. Particularly memorable was the *Diary* of Dr. John Casaubon ('At Dinner I was almost Choaked by swallowing a bit of Roasted s^{r} of Mutton . . . my Melancholi suggested it was an Extraordinarie Judgement . . . '); and an agreement to cure 'hipocondriak melancholy madness' by the Quack David Irish. A slave-ship surgeon's catalogue, a hospital surgeon's notebook, and numerous case-books completed a very valued collection, which incidentally also told us how Cromwell cured his pimples and when Schweppes mineral waters were first introduced. Last but hardly least, came the care of the sick; and naturally here, the hospital records really came into their own, regulating the amount of fuel and beer allowed to each patient with terrifying efficiency. The section closed somewhat lugubriously with lunacy.

The afternoon's meeting at Cutler's Hall, near St. Paul's, proved equally memorable, with an able talk by Dr. Charles Newman on 'Medical Records,' in which he treated exhaustively the various types of records, emphasising in particular the need to preserve case-books, at least by sampling. The President of the Association, Sir Hilary Jenkinson, in his vote of thanks, promised to take up this matter of *preservation,* and the proceedings ended with a lively general discussion.

F. N. L. P.

The Schuman Medical Historical Essay Prize
1958

The Committee on the Ida and Henry Schuman Historical Essay Prize (Genevieve Miller, George Rosen, John F. Fulton) takes pleasure in announcing that Dr. Vincent T. Andriole, North Carolina Memorial Hospital, Chapel Hill, North Carolina, has won the prize of $250 for his essay entitled "Florence Sabin—Teacher, Scientist, Citizen." The essay was based on a thesis which won Honorable Mention in the thesis prize contest at the Yale University School of Medicine in 1957.

The Schuman Prize Committee is glad also to award Honorable Mention to Dr. Ronald A. Malt, Massachusetts General Hospital, Boston, for his

essay, "Lionel Wafer, Surgeon to Buccaneers." Both of these essays will be published in the *Journal.*

Lectures Given by Dr. Kenneth D. Keele

On 9 December 1958 Dr. Kenneth D. Keele, Visiting Professor of the History of Medicine at Yale University, gave the twenty-third Beaumont Lecture of the Beaumont Medical Club. His title was "The Genesis of Mona Lisa." Three days later he gave The Hideyo Noguchi Lecture at the Institute of the History of Medicine, Johns Hopkins University School of Medicine, his subject being "Leonardo da Vinci: The Man and His Work."

Dr. Fulton Receives the Sarton Medal

At the annual meeting of the History of Science Society held in Washington, D. C., 29 December 1958, the fourth George Sarton Medal was awarded to John F. Fulton. Previous recipients have been Dr. Sarton himself, Drs. Dorothea and Charles Singer (joint), and Professor Lynn Thorndike. The medal was presented by Professor Henry Guerlac, President of the Society.

First Obligatory Course on the History of Medicine in the United Kingdom

Preparations are now well advanced for the inauguration of a regular course of lectures in the history of medicine at Guy's Hospital Medical School, London. They are to be given by Dr. Edmund J. Moynahan, who is Assistant Physician in the Department of Dermatology at Guy's Hospital and Lecturer at the Institute of Dermatology in the University of London. Although Dr. Moynahan has not been prominent hitherto in historical circles, he has long been interested in the history of medicine and he—and the authorities at Guy's—are to be warmly commended for setting this important precedent in English medical education. There has for some time been established at Guy's a weekly 'Clinical Lecture' for which the lecturer may choose any subject he likes Dr. Moynahan, having been appointed to give these lectures for the next three years, has chosen the history of medicine and the Dean has been so convinced of their value that he has decided attendance at the lectures shall be obligatory, with the idea that if this course proves successful, it shall be established as a permanent feature of the curriculum.

F. N. L. P.

Historical Gleanings

In the *Transactions of the American Philological Association,* 1957, *88,* 103-113 Harold W. Miller shows that Plato, for whom the flow of the phenomenal world was an established principle, assumed in his *Timaeus* a flux also of the body and consciously employed this assumption in the explanation of many physiological phenomena. To him the physical body

was a complex of unceasing motions of particles, and its nutrition, its growth, the maintenance of its stability after growth, and its natural death were all understood by him "in terms of the relative balance and equilibrium of the motion of flux."

The journal *Greece & Rome,* Second Series, 1957, *4,* contains two articles which deal with ancient medicine. In the first, on pages 98-103, E. Watson Williams re-examines the ever-provocative problem (cf. Sir William MacArthur, *Bulletin of the History of Medicine,* 1958, *32,* 242-246) of the epidemic described by Thucydides; he points out that it was marked also by the death of birds and animals and that "bubonic plague is the only known disease of which this has always been a striking feature." In the second article, on pages 132-138, H. H. Huxley cites such authors as Juvenal, Suetonius, Ovid, Martial, Pliny, and Seneca in his consideration of "Greek doctor and Roman patient." Juvenal, it will be remembered, when he was enumerating the many occupations which could furnish a livelihood to the *Graeculus esuriens* in Rome, put the practice of medicine *(Sat.,* 3.77) between the skill of the walker on a tightrope and the dark art of the wizard.

The Journal, 1956, *11,* 354 reported the newly discovered catacomb fresco and has cited in succeeding years literature upon it. In the *Bulletin of the New York Academy of Medicine,* Second Series, 1958, *34,* 672-683 Curt Proskauer reviews the various theories and maintains that the fresco represents an anatomical dissection for teaching purposes. His paper, presented at a meeting of the Section on Historical and Cultural Medicine on 22 January 1958, was followed by a discussion in which George W. Corner, Loren C. MacKinney, Rosalie B. Green, A. Hyatt Mayor, Fred A. Mettler, Meyer Schapiro, and the Rev. John H. Harrington participated; their remarks are printed on pages 683-686.

N. R. Ker in his definitive *Catalogue of manuscripts containing Anglo-Saxon* (Oxford, Clarendon Press, 1957) describes in particular manuscripts of the tenth, eleventh, and twelfth centuries and includes tracts or pieces on veterinary medicine, urines, the growth of the human foetus, herbs, and of course numerous medicinal recipes. A most useful companion to this is Wilfrid Bonser's bibliographical tool entitled *An Anglo-Saxon and Celtic bibliography, 450-1087* (Berkeley and Los Angeles, University of California Press, 1957), in two volumes, the first of which provides the bibliography and the second an author index and a subject and topographical index to the bibliography. The work covers material published to the end of 1953, and entries 7407-7481 deal exclusively with medicine under the headings, documents and commentaries on them, nomenclature, epidemics, and general and miscellaneous, including diet and public health. It will be remembered that Dr. Bonser has written extensively himself on Anglo-Saxon medicine and magic.

The proceedings of the Symposium Internazionale sul Diencefalo, which was held in Milan 3-5 May 1956, have been published in *Pathophysiologia diencephalica* (Wien, Springer-Verlag, 1958). The historical introduction to this volume is provided by Luigi Belloni, who on pages 1-17 traces from ancient times to the present day the history of man's knowledge of the seat of the soul beginning with the "rete mirabile."

Josiah C. Russell's careful study of *Late ancient and medieval population* is published in the *Transactions of the American Philosophical Society,* 1958, *48.* It numbers 152 pages and is provided with many statistical tables throughout the text and a helpful index at the end. Historians of medicine will find of special interest the section on expectation of life (pp. 22-35), which presents definitions and problems and discusses Roman evidence, medieval evidence, span of life, and mortality rates, and that on disease (pp. 35-45), which treats of late ancient epidemics, tuberculosis, malaria, plague, and other diseases. Professor Russell, of the University of New Mexico, has an outstanding reputation in the field of demographic studies.

The Microcard Foundation, which is affiliated with the University of Wisconsin Press, announces the publication on microcards of the 26 volumes of Karl Gottlob Kühn's *Medicorum Graecorum opera quae exstant* (Leipzig, 1821-1833). The authors represented in this standard edition, which provides the Greek text and a Latin translation, are Galen, Hippocrates, Aretaeus, and Dioscorides. The microcard edition may be purchased at $125 from the Microcard Foundation, Box 2145, Madison 5, Wisconsin.

Luigi Stroppiana in *Accademie e biblioteche d'Italia,* 1957, *25,* 288-291 calls attention to the many medical manuscripts, ranging in date from the fourteenth century to modern times, which are preserved in the Fondo Campori of the Biblioteca Estense of Modena. This library of Giuseppe Campori (1821-1897) was catalogued by Luigi Lodi (*Catalogo dei codici e degli autografi posseduti dal Marchese Giuseppe Campori,* Modena, 1875-1884) and by Raimondo Vandini (*Appendice prima* [*seconda*] *al catalogo dei codici e manoscritti posseduti dal Marchese Giuseppe Campori,* Modena, 1886-1894).

At an exhibit inaugurated in October, 1958, in the Biblioteca Malatestiana at Cesena various documents were displayed which illustrated the history of the city from the fourteenth to the nineteenth century. They were assembled by Antonio Domeniconi, director of Cesena's Archivio Storico Comunale, and included a directive of the Consiglio Comunale, 24 January 1434, fixing an annual salary for the physician Lodovico Stefani, who was thereby obligated to visit the sick twice a day. He was not, however, permitted to recommend a pharmacist; the choice of pharmacist was to rest with the patient. Another document, written by the pharmacist

Girolamo Rossi in 1641, listed the fifty and more ingredients required for the public preparation of theriac.

The Pierpont Morgan Library has recently acquired a copy of the *Ordnung der Gesundheit* which was published at Augsburg by Johann Schönsperger on 1 September 1481 (Klebs 828.5, Sudhoff 13, Schreiber 5058). The copy is complete except for the last blank and a portion of the last printed leaf; this leaf has been repaired and the text of about one fourth of it has been supplied in manuscript.

In a pleasant essay in the *University of Rochester Library Bulletin,* 1957, *12,* 41-49 Virginia Moscrip discusses the incunabula in the Edward G. Miner Library of the School of Medicine and Dentistry.

The Carnegie Institute of Technology has recently announced a gift of $2,800,000 from Mr. and Mrs. Roy Arthur Hunt for the construction of a new campus library. It will be a structure of steel framing with aluminum facing and is designed to accommodate 350,000 books in the library proper and another 125,000 in basement alcoves. The distinctive feature will be a penthouse, surrounded by a promenade between rows of trees and shrubs, which will shelter in dramatic but also practical fashion the renowned botanical collection of Mrs. Hunt. This collection, assembled over many years of patient and devoted effort, is particularly rich in items of the fifteenth, sixteenth, and seventeenth centuries and contains in all 2,000 titles in addition to an exceptional group of prints and original drawings. The first volume of the illustrated catalogue of the collection, compiled by Jane Quinby and containing descriptions of 402 items which range in date from the twelfth through the seventeenth century, was privately published in November, 1958, under copyright held by The Hunt Foundation. Copies are not on sale; the supply and distribution privilege is held by the L. H. Bailey Hortorium of Cornell University.

The first volume of P. S. Allen's edition of the letters *(Opus epistolarum)* of Desiderius Erasmus was published in 1906. More than half the edition had appeared before Allen's death in 1933, and Volume 11 completed the text in 1947. The index volume (Tom. XII: Indices compilavit Barbara Flower, perfecit et edidit Elisabeth Rosenbaum, Oxford, Clarendon Press, 1958) now completes the set with an index of correspondents, an index of Erasmus' writings, and a general index including both names and subjects. Although the principle of selection obtains throughout and the indices are not exhaustive, the volume will serve to specify many of the relations which Erasmus had with physicians and with the practice of medicine in his day. Under a general heading "Illnesses, Erasmus," e.g., are listed the subheadings "calculus," "camomile and parsley poultice," and "turpentine," and there is a section for the sweating-sickness. It may be added here that a letter of Erasmus to Paracelsus and one of Paracelsus to Erasmus which are printed in Volume 7 of Allen's edition

are given a new interpretation by W. A. Murray in *Bibliothèque d'humanisme et Renaissance,* 1958, *20,* 560-564. Since 1568 it had been thought that the letter of Erasmus was a reply to that of Paracelsus. Murray inverts the order and establishes the following sequence of events in the relations between the two men: "(i) Whilst Paracelsus is attending Froben Erasmus also consults him about his own condition. . . . (ii) Froben appears to make a recovery: Erasmus . . . decides to ask Paracelsus for a prescription. . . . He writes to Paracelsus, perhaps in March 1527. (iii) Paracelsus sends medicines with a covering letter. . . . (iv) Two or three months later Paracelsus is appointed Town Physician and Lecturer in the University in Basle. . . . (v) Paracelsus in his lectures launches the first of his public attacks on the Galenists, provokes great opposition from the doctors of Basle, and is obliged to withdraw early in 1528." Erasmus's translations from Galen were mentioned in the Journal, 1958, *13,* 416.

A French translation of Michael Servetus's *In quendam medicum apologetica disceptatio* [Paris, 1538) has been published by F. Rude, with the assistance of Canon Pierre Cavard, in *Bibliothèque d'humanisme et Renaissance,* 1958, *20,* 377-387. The translation, prepared for the fourth centenary of the death of Servetus in 1553, had been ready before the appearance of the English translation by Charles Donald O'Malley in his *Michael Servetus, a translation of his geographical, medical and astrological writings. . .* (Philadelphia, American Philosophical Society, 1953), pp. 168-188. The tract was directed against Jean Tagault, dean of the medical faculty at Paris, who had objected to Servetus's teachings in judicial astrology. As many copies as possible of the original edition were confiscated; M. Rude calls the copy at the Bibliothèque Nationale unique, but Madeline Stanton in her bibliography (John F. Fulton, *Michael Servetus, humanist and martyr,* New York, Herbert Reichner, 1953, pp. 47-92), No. 23, locates a copy also at the Sorbonne.

The *Library of Congress Information Bulletin,* 1958 (June 30), *17,* 341-342 points out that in No. 27 of *Mousaion,* a monographic series on books and libraries which is issued by the University of South Africa, Herman J. de Vleeschauwer assigns the origin of Francis Bacon's classification of the sciences to the *Examen de ingenios para las ciencias* (Baeza, 1575) of the Spanish physician and psychologist Juan Huarte de San Juan. The influence of this work is traced by Professor de Vleeschauwer for his particular field of study from Bacon through Pierre Charron, Jean d'Alembert, and Diderot's *Encyclopédie.* The work has long been considered a monument of medicine; it passed through several English, French, and Italian editions, and it was translated into German by Gotthold Ephraim Lessing, the noted German critic and dramatist who in 1748 actually registered as a student of medicine and in 1770 became librarian of that treasure-house of manuscripts, the Herzog-August-Bibliothek at Wolfenbüttel.

The presidential address delivered by Mr. W. R. LeFanu, Librarian of the Royal College of Surgeons of England, on 8 May 1957 before the Huguenot Society of London is printed in the Society's *Proceedings,* 1957, *19,* 199-209. It concerns the collection of eulogies written by Jacques de Cahaignes of one hundred of his fellow citizens in the Norman town of Caen, from which town Mr. LeFanu's own ancestors came into exile in England and Ireland. The collection was published in Caen in 1609 (ex typ. Jacobi Bassi) under the title *Elogiorum civium Cadomensium centuria prima;* an anonymous French translation appeared in Caen in 1880. The eulogies are character studies rather than biographies in the modern sense; arranged in chronological order of deaths, beginning with the men whom the author revered as a youth and ending with those who died just before he published his book, they give a picture of a busy, prosperous, democratic town in the shifting times of the wars of religion, a town which was tolerant of its citizens who had adopted Reform but was not always successful in providing harmony for the people of the two religions. Mr. LeFanu quotes excerpts which describe representatives of many trades and professions. Cahaignes was himself a physician, and for many years professor of medicine in the university of his native town. Of particular interest to medical historians will be his eulogy of his teacher Jean Le Paulmier, who had practised medicine in Paris for eleven years with Jean Fernel, and the following ingenuous comment on himself: "Nicholas Michel, while teaching in our University, decided to study medicine. He chose me as his teacher, not that I was the best, far be it from me to claim that glory, but I may say that I was not the worst."

A later issue of the Journal will carry a review of the historical portions of *Circulation. Proceedings of the Harvey Tercentenary Congress,* edited by John McMichael (Oxford, Blackwell, 1958). The book was published simultaneously in the United States by Charles C Thomas, Springfield, Illinois.

The great *Survey of London,* under the general editorship of F. H. W. Sheppard, has now reached Volume 27, Spitalfields and Mile End New Town (Athlone Press, University of London, for the London City Council, 1957). The last few years have initiated as important a period of rebuilding in London as any since that which followed the Great Fire, for many structures recently erected have filled in gaps caused by bombing in World War II, and others have replaced buildings which had outlived their useful span of life. The Architectural and Historical Buildings Sub-Committee of the Town Planning Committee is endeavoring to record these and many other buildings before their demolition, and it has been decided also that the *Survey* should concentrate its attention upon central areas of London—Westminster, St. Marylebone, Holborn, and part of Stepney—which contain a large proportion of London's finest surviving buildings. This volume, representing the first published results of this decision, inevitably presents

some details of interest to medical historians. Numerous almshouses are considered, and also the following hospitals: Infirmary for Asthma, Consumption, etc. on Brushfield Street, Jewish Medical Clinic on Fournier Street, La Providence French Protestant Hospital, London Dispensary, Royal Chest Hospital, and St. Peter's Hospital on Vallance Road. We read also of Red Lion Street, where Nicholas Culpeper is reputed to have lived in the 1640's; of Brick Lane, where Robert Diggs, Doctor of Physic, was possessed of a piece of land and in 1694 proposed to erect thereon "two little shedds or places called Banquetting houses," a project which was apparently never completed after Diggs accused the joiner of failing to fulfil his contract and the joiner in turn accused Diggs of failing to pay his wages; and of Spicer Street British School, which was opened in 1812 by a society which included among its founding members Dr. George Birkbeck and Joseph Jackson Lister, the founder of modern microscopy and the father of Lord Lister.

The Danish Medical Bulletin, 1958, *5,* 200-209, contains an illustrated article by E. Snorrason entitled "Danish physicians and the periodicals of the seventeenth and eighteenth centuries." Dr. Snorrason makes clear that Denmark's early participation in the periodical form of publishing was due to the fact that anatomy and medicine were flourishing there during the middle and the latter part of the seventeenth century. He is reminded, as he considers the myriads of medical journals published since and still issuing today in discouraging abundance, of the words of the French physician Théophraste Renaudot, founder in 1631 of *La Gazette de France,* who said, "Le journal tient de la nature des torrents, qu'il se grossit par la résistance."

At the Symposium Internazionale di Storia delle Scienze, which was held at Pisa-Vinci 16-18 June 1958, Luigi Belloni delivered a paper on the beginnings of microscopic anatomy and the contribution of the *De pulmonibus* of Malpighi. A second paper relating to medical history was Ladislao Münster's "La virtù del pesce torpedine di produrre 'tremore tremendissimo' esaminata e discussa dai più grandi naturalisti del '600" (cf. Journal, 1956, *11,* 229-230).

A note in the Journal (1958, *13,* 263-265) by its Editor has recorded a volume in the Historical Library at Yale which once belonged to Sir Kenelm Digby. Dennis E. Rhodes, continuing his Sienese studies in the *British Museum Quarterly,* 1958, *21,* 61-63, points out that Sir Kenelm died on 11 June 1665, that most of his books came into the possession of his cousin George Digby, second Earl of Bristol, who died in 1676, and that an auction sale was arranged for 19 April 1680. In the catalogue of this sale, *Bibliotheca Digbeiana, sive Catalogus librorum . . . quos post Kenelmum Digbeium . . . possedit illustrissimus Georgius Comes Bristol nuper defunctus . . . ,* Mr. Rhodes has found listed six books which were printed in Siena and which are not now in the British Museum with other Digby holdings. One of the six, Girolamo Pinelli's *Theoricae, ac practicae medicinae aphorismorum*

libri VIII (Siena, 1617) was medical, and it would be of interest to know its present location. Sir Kenelm was admitted to the Accademia dei Filomati in Siena in 1621, at the age of eighteen, and it seems likely that at least some of his Sienese imprints would have been acquired during that or a subsequent stay in Siena. Readers assessing Sir Kenelm's influence in the seventeenth century may wish to peruse for purposes of comparison the note by A. G. Hill (*Times Literary Supplement,* 5 September 1958) on his collateral descendant Kenelm Henry Digby, who was born in Dublin in 1796 and whose medievalism as set forth in such works as *The broad stone of honour* and *Mores catholici* was an important influence on English conservative thought of the nineteenth century.

It was fitting that Elizabeth H. Thomson's article on Thomas Bond (1713-1784), the first professor of clinical medicine in the American colonies, should appear in the *Journal of Medical Education* (1958, *33,* 614-624). Historians are grateful for this authoritative biography, which is the outgrowth of a paper delivered before the American Association of the History of Medicine in Detroit in 1955.

The friendship of Dr. John Fothergill with Benjamin Franklin is carefully examined by Betsy Copping Corner in the *Proceedings of the American Philosophical Society,* 1958, *102,* 413-419. Mrs. Corner demonstrates that a letter recently discovered by Whitfield J. Bell, Jr., among the manuscripts of the Richmond Academy of Medicine establishes definitely the part played by Fothergill in directing public attention to Franklin's early electrical experiments. The letter was written by Fothergill on 18 March 1751 to Dr. William Cuming, a country doctor in Dorset, and describes a present which Fothergill was sending, Franklin's *Observations and experiments on electricity made at Philadelphia in America* in the edition published in the spring of 1751 by the editor of *Gentleman's Magazine,* Edward Cave.

The early symptoms of the bibliophilic disease as it is manifested in L. R. C. Agnew are delightfully set forth in his article "In search of Jeffrey" (*American Book Collector,* 1958, *8,* 3-11). Francis Jeffrey, it will be remembered, was the Scottish critic and editor of the *Edinburgh Review* against whom Lord Byron hurled such savage strictures in the several editions of his *English bards, and Scotch reviewers: a satire.* Dr. Agnew contributes also some very practical views on the history of medicine and the teaching of it in the *Journal of Medical Education,* 1958, *33,* 731-735.

This department has received through the kindness of Robert Herrlinger Heft 3 August 1958, of *Mitteilungen aus dem Institut für Geschichte der Medizin an der Universität Würzburg.* It contains, reprinted from *Die Mainlande,* 1958, *9,* 53-56, his "Wiedergefundene Pläne der Anatomie im Juliusspital aus dem Jahre 1804," his "Praktische Arbeit zur medizinhistorischen Inventarisation," and in connection with the latter samples of "Links und rechts am Wege," a series appearing in *Neue Zeitschrift für*

ärztliche Fortbildung which with the co-operation of all interested in medico-historical topography will constitute a kind of Baedeker for physicians and contribute to the systematic inventory in which the Deutsche Gesellschaft für Geschichte der Medizin, Naturwissenschaften und Technik has interested itself. The issue concludes with notices on the Würzburg Institut, for the continued success of which the Journal extends its good wishes.

In the *Proceedings of the American Philosophical Society*, 1958, *102*, 136-141 Helmut De Terra examines the sad fate of Alexander von Humboldt's library, which was willed to his servant Karl Seifert in 1841. Three weeks after Humboldt's burial it was offered for sale to William W. Corcoran of Washington; the Smithsonian Institution and the Astor Library were also interested in preserving it intact, but it was ultimately scattered by public auction. The centenary in 1959 of Humboldt's death occasions a renewed effort, already commenced for the biography which was published in 1955 (Helmut De Terra, *Humboldt: the life and times of Alexander von Humboldt, 1769-1859*, New York, Alfred Knopf), at locating in this country unpublished letters and other documents of the great scientist. Many are already recorded at the Library of Congress, the American Philosophical Society, and the New-York Historical Society. A portrait of Humboldt painted by Charles Willson Peale, whom Humboldt knew in Philadelphia in 1804, now hangs in the College of Physicians there. Readers will recall that Dr. De Terra is the American member of the team of scientists, headed by Dr. Johannes Huerzeler of Basel, whose twenty-eight months of systematic search was rewarded in 1958 with the discovery, six hundred feet underground, in a coal mine at Baccinello, near Grosseto, of the skeleton of an Oreopithecus. This manlike creature, which stood, ten million years ago, a little more than four feet high, is believed to be the earliest progenitor of man yet discovered (Arnaldo Cortesi in *The New York Times*, 4 August 1958 and Andrea Barbato in *Il Messaggero di Roma*, 7 August 1958).

To "Grosse Österreicher," 1958, *12* (*Neue Österreichische Biographie ab 1815*, Wien, Amalthea-Verlag), Erna Lesky has contributed on pages 38-51 the biography of Carl von Rokitansky. It includes an appreciation of his place in the history of pathology and provides a helpful bibliography.

In detail and with extensive documentation G. Penrhyn Jones of Llangwyfan discusses in *The National Library of Wales Journal*, 1958, *10*, 281-300 the four great epidemics of Asiatic cholera in Wales which in the summer months of each of the years 1832, 1849, 1854, and 1866 caused several hundred deaths. The disease gained a footing in Great Britain again in 1893, but in Wales the outbreaks were small and scattered and the deaths few. "The relative insignificance of that last abortive epidemic was in itself a testimony to the progress made in Wales in the care of the public health during the latter part of the nineteenth century."

Historians desiring more information on Lieutenant Colonel Edward Dominicus Kittoe (1814-1887), Staff Surgeon to General Ulysses S. Grant, than is provided in Francis B. Heitman's *Historical register and dictionary of the United States Army* (Washington, 1903), vol. 1, p. 605, will do well to refer to Dr. E. R. N. Grigg's article, "The chronicle of a 'book,'" in *Isis*, 1957, *48*, 463-467. Colonel Kittoe once possessed the Linnaean pamphlets which were bound into the "book" described there, and in assembling the facts on his life Dr. Grigg received assistance from his granddaughter, Mrs. Elizabeth K. Bench of Galena, Illinois.

From 6 November to 31 December 1958 the Library of Congress displayed sixty-six advertising posters which had been deposited for copyright registration between 1837 and 1876. A number of them proclaimed the virtues of this or that cure-all. Reminiscent of the medical caricatures of George Cruikshank was one which depicted in its upper half satanic imps attacking with pickaxes and crowbars the head of a man obviously in torment from a combination of cephalalgia and odontalgia. In the lower half the imps are put to sudden and inglorious rout the moment he takes from the shelf a bottle of Wolcott's Instant Pain Annihilator. The posters are now being circulated throughout the United States by the Traveling Exhibition Service of the Smithsonian Institution.

On 21 May 1958, the Elmer Belt Florence Nightingale Collection was presented to the University of California Biomedical Library in honor of Dean Lulu Wolf Hassenplug, "who has guided the School of Nursing of the University of California at Los Angeles from its inception and early formative years to its Tenth Anniversary Year." The collection, numbering sixty-eight manuscript and printed items, is described by Mrs. Kate T. Steinitz on pages 10-19 of a brochure printed by Grant Dahlstrom at the Castle Press, Pasadena, California; on pages 3-9 Dr. Belt discusses Florence Nightingale's role in history. A brief account of his Library of Vinciana is furnished by Dr. Belt in *Italian Quarterly*, 1958, *2*, 52-57.

On 8 June 1958, in a significant ceremony, the body of the clinician and physiologist Carlo Forlanini, who died on 25 May 1918, was transferred to the Famedio of the Cimitero Monumentale in Milan. It is in this shrine that Milan's most illustrious citizens are interred. Forlanini, who taught for many years at the University of Turin and the University of Pavia, introduced artificial pneumothorax in 1888. The Mayor of Milan and the Rector of the University of Pavia participated in the ceremony, which was concluded by selections from Vivaldi and Bach performed by the orchestra of La Scala.

As an addendum to the note on Richard Maurice Bucke by Richard D. Walter in this department, 1958, *13*, 260-263, attention may be called to the exchange of letters between Dr. Bucke and Patrick Kevin Foley of Boston, 24 and 28 December 1901, which was published in *Life in Letters*,

American Autograph Journal (American Autograph Shop, Merion Station, Pa.), 1940, 456-459. Foley's work, *A bibliography of first and notable editions chronologically arranged with notes,* had appeared in Boston in 1897. The letters concern editions of Walt Whitman which Foley had ordered from Bucke, and they make clear that there was only one issue of the first edition, 1855, of *Leaves of grass.* It is to be hoped that the letters are now safely preserved in some Whitman collection.

The Deutsche Gesellschaft für Geschichte der Medizin, Naturwissenschaften und Tecknik announces an essay contest on the subject "Geschichte der kybernetischen Steuerung von Therapiegeräten." The essays should examine the pioneer contribution of Oscar Helmer in this field (1909) and the developments to the year 1945. The prize is 500 German Marks; the essays may be written in German, English, French, or Italian and must be submitted by 30 September 1959. Further particulars may be obtained from the editor of this department. The tenth annual meeting of the Deutsche Gesellschaft für Geschichte der Medizin, Naturwissenschaft, und Technik, at which this contest was proclaimed, took place at Goslar 4-8 October, 1958; sessions were held also at Clausthal and Wolfenbüttel. The proceedings will be reported in the society's *Nachrichtenblatt.*

Il Messaggero di Roma for 8 October 1958 reported the strange find, in front of a shop in Milan, of an old suitcase containing one live snake and one plaster foot. The historian of medicine might conclude hastily that here was a remnant, in a modern city, of some practice of primitive or folk medicine. Quite the contrary; it appears that the suitcase belonged to an itinerant vendor of corn plasters who, taking refuge in the shop's entrance during a sudden shower, had forgotten the tools of his trade on his departure. With the snake he was wont to attract a crowd around himself at some street corner, and on the plaster foot he would then give a practical demonstration of his product. Madison Avenue could do no better.

Book Reviews

ERNEST SACHS. *Fifty Years of Neurosurgery, a Personal Story.* New York, Vantage Press, 1958. 186 pp., illus. $3.50.

Reviewed by the EDITOR.

ERNEST SACHS (Senior) dean of American neurosurgery, was born in New York on 25 January 1897,† scion of a long line of distinguished forebears, his father having been Julius Sachs, Professor of Secondary Education at Columbia, his cousin, Paul J. Sachs, one-time Director of the Fogg Art Museum at Harvard, and his uncle, Bernard Sachs, a famous neurologist who organized and served as President of the First International Neurological Congress held at Berne, Switzerland, in September, 1931.

Dr. Sachs is an inveterate traveler and some of the most attractive parts of his autobiography are those relating to his travels. His family, although unredeemed New Yorkers, nevertheless seemed to regard New York as a "jumping-off place" for a trip to Europe or for a rapid circumnavigation of the globe. In his years of training, Sachs had the advantages of a Harvard undergraduate education, and in the early days of Charles W. Eliot and the elective system young Sachs obtained his background in the sciences from Theodore Richards in chemistry, Nathaniel Shaler in geology, and George Howard Parker in zoology. He no doubt acquired a measure of sophistication from the quick-witted Barrett Wendell but it is surprising to have Dr. Sachs say that Wendell and Edward Channing "were not exciting teachers," for at one period in his career, Barrett Wendell had stirred up no end of trouble for himself by his *ex cathedra* pronouncements and his earthy anecdotes, but possibly these came in his later years. Sachs records, however, that Albert Bushnell Hart, Professor of History, aroused great enthusiasm among his listeners, mentioning his gratitude to Hart for giving him first-hand experience in seeking out original source material. One wishes that Dr. Sachs had given more details concerning the Harvard teaching faculty at the turn of the century.

At the Johns Hopkins Medical School, which he entered in 1900, he witnessed the growth from small beginnings of a great school which came to have a commanding influence on the history of medical education in this country. He had the good fortune to become acquainted with all the leading figures beginning with Daniel Coit Gilman, William Osler, William Welch, Franklin Mall, Howard Kelly, and John J. Abel and their younger colleagues, Florence Sabin and Frederick Lewis. This conclave of able minds left its mark on Ernest Sachs, and while Harvard had been liberal as far as freedom of choice was concerned, attendance was still taken and recorded in all seminars and most lectures whereas at the "Hopkins," the attitude was

† Dr. Sachs died on 2 December 1958.

one of take-it-or-leave-it. As at Oxford, no one was obligated to do anything, the opportunities were presented and if one chose to take advantage of them, fine, but if not, one was at liberty to work in the sphere of his own special interest.

Dr. Sachs pays handsome tribute to William Howell, physiologist, and John Abel, pharmacologist, for their carefully planned lectures with ancillary classroom demonstrations and experiments actually performed by the students. Some amusing stories about Halsted are related, and toward the end of his tour of duty at Hopkins, Ernest Sachs crossed Harvey Cushing's path in Cushing's special course in animal surgery held at the old Hunterian Laboratory.

Of the men at the Hopkins during these years, it was Osler who influenced him most. Thus he says,

> But of all the Hopkins faculty the man who stood out preëminently was William Osler. He was a master teacher, also possessed of all the qualities that make a great physician and a great human being. His interest in his patients and his care of them made an indelible impression upon us, and he had the magic touch that could transform any occasion in a moment. I remember his coming into the ward one dark, dreary morning and catching sight of an old alcoholic reprobate with a long, scraggly beard, who had been in repeatedly for cardiac decompensation. "Hello, Neptune! You back again?" he called out, waving to him. Instantly the whole ward—students, nurses, and attendants—seemed transformed into a happy, congenial family, and that day, as always, when he was present, there was not a dull moment on rounds.
>
> He had an extraordinary way of bringing home a fundamental truth. One one occasion he brought a patient into the clinic with his shirt rolled up around his neck, exposing the chest and upper abdomen. When he asked a student what he saw, the younger man described various inconsequential matters. Then Dr. Osler told the patient to take off his shirt. This exposed a huge, pulsating aneurysm that had eroded the clavicle. Then followed a few brief but never-to-be-forgotten remarks on the importance of always taking off a patient's clothes completely when making an examination. Thus in using simple emthods he emphasized important facts and impressed them upon his students. I never heard him say an unkind word to anyone, and a more devoted and enthusiastic student body cannot be conceived. Every Saturday night, he had his senior medical group at his home, and, after inquiring what each one of us had seen during the week that was of special interest, he spent the rest of the time showing us some of his rare historical treasures, the great collection that is now at McGill, in Montreal.

As a member of a cosmopolitan family, it was natural that Sachs should seek his postgraduate training abroad, although he first spent several months in New York working under Arpad G. Gerster and his uncle Bernard Sachs. In Berlin, he went to Oppenheimer's clinic, and later to the clinics of Carl A. Ewald and A. F. Hoffa. In Italy, it was natural that he should go to Bologna to pay respects to one of the most brilliant surgeons of the early years of this century, Vittorio Putti, who was then in process of developing what was to

become his world-renowned Orthopaedic Institute. The climax of his year abroad was his work at the National Hospital, Queen Square, where he had contact with Britain's outstanding neurologists Charles Beevor, Risien Russell, Kinnier Wilson, Gordon Holmes, and, on rare occasions, Sir William Gowers; but his real Mecca was the laboratory at University College of Sir Victor Horsley who was then at the height of his surgical career. Sachs's regard for Sir Victor was deep and very real, and he became an ardent disciple of Horsley's teachings, particularly in the importance attached to neurophysiology in the training of a neurosurgeon. He found himself somewhat upset, however, by Horsley's casual aseptic technique but he saw virtue in the speed with which Horsley operated, albeit in rubber boots, bare hands, and unsterile rubber apron.

If more time has been devoted to Dr. Sachs's early years than to those which came after he had received the wide recognition so rightly due him, it is because younger men who are now for the first time taking up neurosurgery will derive inspiration from his example and perhaps be led to emulate some of the things he did to give himself the best possible training before settling down to his life's work. It is not often that the son of a famous father follows in the father's footsteps, yet this is indeed true of Ernest Sachs, Jr., now neurosurgeon to the Mary Hitchcock Memorial Hospital and Clinic at Hanover, New Hampshire. When the time came to retire from active practice, Ernest, Sr. came to Yale as an Honorary Research Fellow in Physiology, succeeding his son "Ernie," Jr., who had then just served for a year as a Fellow.

WILLIAM HARVEY. *De motu cordis. Movement of the Heart and Blood in Animals: An anatomical essay.* Translated by Kenneth J. Franklin. 221 pp., frontispiece. Springfield, Illinois, Charles C Thomas, 1957. 209 pp. $3.50.

Reviewed by HENRY VIETS, *Curator, Boston Medical Library, Boston, Massachusetts.*

ONE of the tributes to William Harvey on the tercentenary of his death was the publication of a new translation from the Latin into English of *De motu cordis.* The standard 1766 edition of the original Latin text was used as a basis, with a few minor emendations, for the translation into English and both are reproduced in the book under review. The translator found that the earlier English versions, of which there have been many, were not always sufficiently accurate for the modern reader doing either experimental or historical research upon the circulation. Having in mind that Harvey had to deal with a difficult and imperfect anatomical nomenclature and that microscopic anatomy had up to his time been linked up with incorrect physiology, Franklin has succeeded in bringing these two views into alignment. He points out that for Harvey the heart was the ventricular portion

only and although he brought the auricular part into his total blood propulsion story, the auricles for him were outside the heart proper. Terms which Harvey used, such as the *vena arteriosa* for the pulmonary trunk and the *arteria venosa* for the pulmonary vein tend to confuse the picture for the modern reader. Franklin has translated these two terms into artery-like vein and vein-like artery, respectively, and with these terms in mind the understanding of Harvey's treatise becomes clear and leads to an increased understanding and admiration of Harvey's contribution. The translation is fresh and clear and the book excellently printed, accompanied by a reproduction in color of the well-known picture in the Royal College of Physicians. There are no accompanying footnotes, bibliography, or index so that only a bare skeleton is offered to the reader. He must look elsewhere for the key to historical allusions and for an understanding of the background on which Harvey based his experiments. The value of this book would have been greatly enhanced had explanatory footnotes been added by an author so competent to do so.

TERENCE EAST. *The Story of Heart Disease.* London, William Dawson and Sons, 1957. 148 pp., 24 plates. 25s.

Reviewed by EDGAR F. MAUER, *Practising physician, Los Angeles, California.*

The Story of Heart Disease presents to the reader the FitzPatrick lectures given by Dr. East in 1956 and 1957. Dr. East, author of standard texts in his specialty, is Senior Physician and Physician in charge of the Cardiological Department, King's College Hospital. The lectures are titled, "Diagnosis," "Lessons of the deadhouse," "The coronary circulation and its disorders," and "Failure of the circulation and its treatment." By avoiding chronological division Dr. East hoped to avoid giving "a succession of dates and names." No historian in presenting the development of a science can escape these ingredients and in fact each section of this book is by necessity arranged in the orderly manner required in the description of the acquisition of knowledge.

One cannot fail to compare this presentation with James Herrick's *A Short History of Cardiology.* Herrick used the double device of division into periods and the description of major affections of the heart. In so doing he gave a more readable account of the contributions of many individuals and, more important, their part in the development of those "schools" which in the eighteenth and nineteenth centuries distinguished themselves. From Herrick one derives the feeling of the concert of effort in Italy, Germany, France, Austria, the British Isles, and the United States which resulted in the birth of modern physiology, pathology, clinical diagnosis, and treatment.

Admittedly the material in this book was derived from lectures prepared for presentation to a live audience, and Dr. East was well aware of the

limitations imposed on the scholar by such a talk. In the lecture hall the restraints imposed by the limits of the listeners' patience must be heeded.

East's book is shorter by a third than Herrick's. This is the reason, it seems to me, for the major fault in these FitzPatrick Lectures as published. It was my impression on reading and again re-reading *The Story of Heart Disease* that the lecture notes were delivered to the publisher with little, if any, effort made to satisfy the demands of a reading audience. The work is therefore uneven, and although there may be divergent opinions on the importance of various workers, there is, in some instances, a lack of definition which is the curse of condensation. An example is the almost fleeting reference to Skoda. At times the conversational style, now devoid of the speaker's inflection, is confusing. It is distressing to criticize the book when it is apparent that so much research went into the preparation of the Lectures.

There are a number of misprints which will baffle the nonmedical reader: "leading" for leaving the lungs (p. 62), "fitrinous" for fibrinous (p. 72), "vague" for vagus (p. 74) and "niero" for micro (organisms) (p. 79).

In the section on Diagnosis (p. 27) Dr. East implies that Allbutt's description of "hyperpiesia" first appeared in *Diseases of the Arteries including Angina Pectoris* published in 1915. Surely Dr. East is aware of the fact that Allbutt's concept of elevation of the arterial blood pressure was pretty well established by 1894 and Allbutt's proper term for that entity was introduced in a lecture before the Hunterian Society in 1895 (Rolleston: *Life of Sir Thomas Clifford Allbutt,* London, 1929, p. 128). Other bibliographical errors are noted: "Cooper" for Cowper (p. 72) and "Cushing" for Cushny (p. 144). On page 21 we find Sir William Bennet, properly identified in the bibliography as Burnett.

In the section on the coronary circulation the accomplishments of a pair of Dr. East's countrymen are unfortunately omitted. In 1842, Marshall Hall, as had others before him, noted the association of sudden death when the coronaries became blocked, but he proposed experimental obstruction of these vessels. In that same year John Eric Erichsen caused cessation of the heart beat by ligating the coronaries, anticipating by decades the work of Virchow and his pupils.

Each section of the work contains a bibliography. (The citation of George Dock's "Some notes on coronary arteries" is incomplete. This early American paper appeared in *The Medical and Surgical Reporter,* 1896, *75,* 127.) At the end a general list is appended. An index, which would have been useful, is lacking.

Dr. East has labored long and hard. He has gone to the original material for much of his information. An expanded and revised second edition would be welcome.

ERWIN H. ACKERKNECHT and HENRY V. VALLOIS. *Franz Joseph Gall, Inventor of Phrenology, and His Collection.* Madison, University of Wisconsin Medical School, 1956. 86 pp.

ERWIN H. ACKERKNECHT. *Kurze Geschichte der Psychiatrie.* Stuttgart, Enke, 1957. 99 pp. DM 12.—.

Reviewed by GEORGE MORA, *Director of the Out-patient Department, Bradley Hospital, Providence, Rhode Island.*

PROFESSOR Ackerknecht's interest in the history of psychiatry is well known to medical historians, as indicated by some of his previous studies, among which worth mentioning is his important paper on "Psychopathology, primitive medicine and primitive culture" (1943). The first of the two books under review, on Franz Joseph Gall and his collection, originally published in French (*Mém. Mus. Hist. Nat.*, Paris, 1955, Série A, Zoologie, 10, Fasc.1, 1-92), is a timely historical contribution. After some decades of enthusiasm for phrenology in the past century, both in scientific and lay circles of the old as well as of the new continent, phrenology is today conventionally condemned in toto and its founders rejected as charlatans. As almost nobody goes back to the original sources of the movement, uncritical judgments and prejudices are repeated from book to book. This monograph by Ackerknecht and Vallois centers on Gall's collection of skulls, casts of heads, and casts of brains, presently located in the Museum National d'Histoire Naturelle of Paris, of which Henry Vallois is director. It explains in detail the history of this collection and some of the most important pieces of it (including the skull of Gall himself), through the aid of some pictures and of anthropological measurements. Aside from the historical interest that this collection presents, the merit of the two authors remains in their attempt to place, in a condensed form, Gall's contribution to science in the perspective of his time, and especially to emphasize his great importance for the development of the concept of cerebral localizations in the realm of neurology. The reader will especially be grateful to the authors for the agile presentation of Gall's biography, of his discoveries and of his ideas, of his movement and of his opponents. He will perhaps disagree with some of the statements made here and there, such as the similarities between Gall and Freud, both being "naturalists," such as Gall having "inaugurated a new era of psychiatry" and similar ones, which tend to bring Gall's contribution outside of the realm of neurology, where it belongs. But he will in any case enjoy this study on Gall and his movement, which is remarkable for its completeness and which greatly contributes to the clarification of the historical importance of the founder of phrenology, far from the uncritical attitude of excessive praise or of radical condemnation.

Passing now to Professor Ackernecht's history of psychiatry, his inclination toward the cultural and social aspects of medicine, which he has derived from his teacher Henry Sigerist, is well evidenced in the first chapter of his book, which deals with some ethnological preliminaries. It is a lively though

a little oversimplified presentation, in line with the great interest in social psychiatry recently developed in this country. It is more valuable in that being a topic generally excluded from books dedicated to the history of psychiatry, it can stimulate the reader to further and more recent sources and it can help to widen the scope of the everyday experiences of the physician.

This wide perspective narrows considerably at the end of the first chapter and is substituted in the balance of the book by the traditional emphasis on the medical contributions to psychiatry. As a result, the exposition of the matter gains in depth but loses in width. This is clearly evidenced in the second chapter, where important aspects of the Greek and Roman tradition (in particular some aspects of religion, as the mysteries, the rituals, and similar expressions of great significance for the understanding of the unconscious psychological forces operating in group behavior) are not considered by the author. Rather, the presentation of the matter is centered around the ideas of the most important physicians of the time, Celsus, Areteus and Soranus. The reader will especially appreciate the detailed description of the classification of mental diseases and therapeutic approach to mental patients by Soranus, as reported by Caelius Aurelianus, which anticipated by centuries the psychiatric revolution of the past century. He will perhaps not entirely agree with the author's emphasis on the somatic approach toward mental diseases as attributed to these physicians, in considering that, especially in relation to treatment, their approach was very similar to modern forms of psychotherapy.

Another point which will probably be questioned by some is the author's dismissal of all the psychiatry of the middle ages as not worth mentioning. This traditional negative attitude toward the middle ages, overcome by modern historiography, while restricting the cultural perspective, makes it difficult to understand the foundation of some hospitals for mental patients, reported by the author, or the humanitarian approach to them used in many religious institutions. The chapter on Renaissance psychiatry is informative and adequate. Of the most important representatives of psychiatry, Weyer and Paracelsus, the author has selected this latter for a thorough presentation of his views on mental disorders, rightly emphasizing the contrasting aspects of his work

The following two chapters, on psychiatry in the seventeenth and eighteenth centuries, are clear and informative. In a few pages, the author has been able to present the views on mental diseases of the most important physicians and scientists, in the light of the cultural trends prevailing at the time. Similarly well presented, though perhaps not too original, is the chapter on the French school of the nineteenth century, where, as expected, the focus is centered on Pinel and Esquirol. The reader will certainly notice with pleasure that the discussion of Pinel's work is maintained on a strictly scientific level, far from the moralistic tone of so many previous descriptions. He will also notice that, even considering the author's emphasis on the

positive achievements of psychiatry, very little attention is given to Gall's phrenological movements, so important in the development of early nineteenth century psychiatry in many nations. A detailed description is instead offered on the problem of degeneration in the following chapter.

The contrasting manner in which German psychiatry of the early nineteenth century has been represented by different authors, according to their theoretical position, is reflected even in Professor Ackerknecht's presentation, which appears provisory, until more conclusive studies on this particular period of psychiatry become available. The reader is left with the impression of a too severe judgment in regard to certain authors, like von Feuchtersleben, whose views are increasingly considered with sympathy in the light of dynamic psychiatry. This impression is, however, soon overcome by the interesting description of Griesinger's psychiatric concepts, which is complete and accurate.

The chapter following, which concerns itself only with the most important psychiatrists of the second half of the nineteenth centry and of the early twentieth century, centers on Kraepelin, while Bleuler's and Meyer's contributions are hardly touched. More complete and satisfactory is the chapter on psychoanalysis, where the author traces the historical roots of the movement back to Mesmer and to the studies on hypnosis of the French school of psychiatry. The psychoanalytic movement is presented largely from a philosophical viewpoint (romantic or materialistic?)—scarcely a task yet for the historian. Finally, in the last pages, the perspective narrows again with the mention of Pavlov's techniques and of the recent methods of shock treatment and of pharmacological treatment.

In considering Professor Ackerknecht's book on the whole, one cannot but be impressed by the amount of information that has been presented in less than one hundred pages. The conciseness of the presentation perhaps explains why the names of certain authors, important in the history of psychiatry, have not been mentioned. Friedrich Spee's "Cautio criminalis" (1631) certainly deserves mention as an early contribution in undermining the belief in witchcraft, especially after the extensive monograph dedicated to Spee by H. Zwetsloot (1954). Similarly, the contributions of American authors, like the founders of the American Psychiatric Association (1844) and among these Isaac Ray (whose study on legal psychiatry remains pertinent even today), are not mentioned at all through the book, which deals almost exclusively with European psychiatry.

Of course, in considering the small size of the book and the simply informative task proposed by the author, one should not be surprised that the contributions to psychiatry of certain people have been overlooked at the expense of detailed descriptions of a few selected authors. Perhaps, rather than mentioning many names, the emphasis could have been put on the main psychiatric issues which have occupied students of human behavior from the beginning of mankind up to the present. From this perspective—

which incidentally the author has used to connect the psychoanalytic movement to Mesmer through the studies on hypnosis—one could gain a more thorough understanding of the historical events. The fact remains that medical historians, even of high caliber, have only rarely approached the subject of psychiatry. In considering this point, Professor Ackerknecht, presently professor of medical history in Zurich, must be congratulated on his work, which undoubtedly will increase interest in psychiatry among medical historians. It is to be hoped that an English edition of this valuable book will soon be made available to a wider audience. At that time certain inexactitudes (the year of Freud's birth, names spelled in different ways, e.g. Kraepelin) can be eliminated. An index would render the book much more useful.

IAN A. PORTER. *Alexander Gordon, M.D. of Aberdeen 1752-1799.* Aberdeen University Studies Number 139. Edinburgh and London, Oliver and Boyd, 1958. 92 pp. 12s. 6d.

Reviewed by HERBERT THOMS, *Professor Emeritus of Obstetrics and Gynecology, Yale University.*

DR. Ian A. Porter closes his fine study of Alexander Gordon with this quotation, "Alexander Gordon was not an uneducated country doctor who stumbled on a few facts and published a few scattered observations. Alexander Gordon was a finely educated physician who practised in one of the three great cities of Scotland, who was associated with the university of that place, and who was in a position to observe accurately and in a scientific manner hundreds of cases of childbirth during his ten years of practice. Not only did he discover a great surgical principle but with true courage he proclaimed it in the face of opposition amounting to persecution." The author greatly honors this reviewer, for these words were written by him in 1929. However, it must be said that primary credit for the rediscovery of Alexander Gordon must be given to A. W. W. Lea who in 1910 wrote, "To Gordon of Aberdeen (1795) must be ascribed the credit for having first demonstrated the infectious nature of puerperal fever."

Anyone who thoughtfully reads Gordon's *Treatise* today should find it difficult to disagree with this statement. It appears certain that it was Holmes's study of Gordon's work that persuaded him that puerperal infection could be carried to healthy women by doctors and nurses. In his *Contagiousness of Puerperal Fever* (1843) Holmes quotes a noteworthy passage from Gordon in capital letters and observes, "His expressions are so clear, his experience is given with such manly distinctness and disinterested honesty, that it may be quoted as a model which might have been often followed with advantage."

Two statements of Gordon reveal him to us: ". . . just so with puerperal fever, women escape it until after delivery, till that time there is no inlet

open to receive the infectious matter which produces the disease, but after delivery the matter is readily and copiously admitted by the numerous patulous orifices, which are open to imbibe it, by the separation of the placenta from the uterus. . . ." "And if in the dissection of a putrid body" he writes, "a surgeon scratch his finger the part festers, that is, inflames and suppurates; and if a fever should be the consequence, it is inflammatory in the beginning and only ultimately putrid. And further, if such a fever be properly treated in the beginning it never becomes putrid at all. In like manner if putrid matter be applied to the uterus, it inflames that organ and the contiguous viscera; that is, *it gives rise to the puerperal fever,* which is ushered in with a cold stage and succeeded with a very rapid pulse and acute pain in the abdomen."

The exact method of conveyance of infection Gordon did not know, and neither did Holmes and Semmelweis. Leonard Colebrook emphasizes this in his recent Jenner Memorial Lecture (1955). "Semmelweis did not know any more than Holmes how the puerperal infection was conveyed."

Dr. Porter has made an important contribution to our knowledge of Alexander Gordon and his work. His on-the-spot coverage of the subject has enabled him to discover facts not hitherto recorded. His book is not only informative but highly readable. It will surely render good service in giving to Gordon the place in history he deserves by the side of White, Holmes, and Semmelweis. All four made contributions to the conquest of puerperal sepsis which have individual values. Each was therefore a pioneer, and in point of time Gordon was first.

The only adverse criticism of this book offered here is that which applies to any historical work which lacks an index. Why this was omitted from an otherwise excellent example of Aberdonian bookmaking is a question that this reviewer, a once-removed Forfarian, hesitates to pursue. "Though they may gang a kennin wrang, To step aside is human."

DAVID L. DRABKIN. *Thudichum, Chemist of the Brain.* Philadelphia, University of Pennsylvania Press, 1958. 309 pp. $5.00.

Reviewed by JOSEPH S. FRUTON, *Eugene Higgins Professor of Biochemistry, Yale University.*

J. L. W. THUDICHUM (1829-1901), a distinguished pioneer in biochemical research, went to London in 1853 from his native Germany, where he had studied medicine at Giessen and Heidelberg. He worked intensively on the isolation and characterization of chemical constituents of animal tissues; his principal contributions were in connection with brain substances now termed phospholipids and sphingolipids. Thudichum discovered cephalin, sphingomyelin, and the cerebrosides phrenosin and kerasin, and was the first to recognize the occurrence, in sphingomyelin and the cerebrosides, of their characteristic component sphingosine, which he isolated and described

accurately. Although this work was not highly regarded by his contemporaries, its importance emerged in better perspective after 1900 through the researches of Thierfelder, Rosenheim (to whose memory Dr. Drabkin's book is dedicated), Klenk, and Carter. In addition to his studies on brain lipids, Thudichum also examined pigments of blood, bile, urine, and corpus luteum; he first prepared hematoporphyrin (which he named "cruentine") and discovered the carotenoid "luteine." He was skillful in the use of the preparative and analytical techniques of the mid-nineteenth century chemists, and was among the first to apply spectroscopy to the examination of natural materials.

In Thudichum's time, biochemistry was not recognized as a university discipline in England, and the academic centers were largely German; the most notable of these were the laboratories of Hoppe-Seyler (Tübingen) and of Kühne (Heidelberg). Thudichum states (in a letter to Virchow) that he emigrated because he was refused a post at Giessen. In England, he had a definite academic connection only during the period 1865-1871, as director of a newly established laboratory of chemistry and pathology at St. Thomas's Hospital Medical School. He also embarked upon the practice of otolaryngology, in which he was notably successful. Thudichum's most important scientific work was done during 1864-1883, when he held the post of chemist to the Local Government Board, whereby he received financial support for his research. One consequence of this association was the initial publication of his studies in the relatively inaccessible Reports of the Medical Officer of the Privy Council. After the loss of his government grant in 1883, Thudichum's scientific output diminished, and he devoted more time to his private practice. He published numerous books, of which his *Treatise on the Chemical Constitution of the Brain* (1884), and the expanded and more polemical German edition (1901), are the most important. Others were: *Pathology of the Urine* (1858; 2d ed., 1877), *A Treatise on Gallstones* (1863), *A Manual of Chemical Physiology* (1872), *Annals of Chemical Medicine* (vol. I, 1879; vol. II, 1881), *The Progress of Medical Chemistry* (1896). In addition, he wrote *On Polypus in the Nose* (1869; 7th ed., 1892), *A Treatise on Wine* (with Dupre, 1872), and *The Spirit of Cookery* (1895).

To quote Dr. Drabkin (pp. 110-111):

Thudichum waged a lifelong struggle for the recognition denied him by powerful opponents. This struggle is attested in his own polemical writings, in which his language was not by any means polite, and which with the years grew in bitterness. Thudichum was frequently at the center of violent controversy, and violence breeds violence—the language of his detractors was even less polite. This can be said: As to facts, Thudichum's record is impeccable, most unusual in science. He was practically 100 per cent right in the various issues. As to the conflict, Thudichum was the defender, not the initiator. And as to the biographer, his is more the role of an enthusiastic protagonist of this man and less that of a debunker, or that of an avenging angel who has come to do Thudichum's opponents in.

As the last sentence suggests, Dr. Drabkin has written a partisan book. In it, he describes affectionately Thudichum's youth, education, family life, hobbies, and friends. His enthusiasm leads Dr. Drabkin to liken Thudichum to Beethoven (p. 77), and to refer to Thudichum as an "incredible combination of Paracelsus, [Claude] Bernard, and [Emil] Fischer . . ." (p. 142).

From our present vantage point in history, it is easy to agree that Dr. Drabkin's principal *bêtes noires*—Hoppe-Seyler, Maly (Graz), and Gamgee (Manchester)—were unjust, even dishonest, in their criticism of Thudichum. It is also possible, however, to see that in the controversy with Maly about the effect of bromine on bilirubin, although Thudichum was correct in stating that the product is not biliverdin but a brominated product, he was wrong in insisting that the empirical formula for bilirubin is $C_9H_9NO_2$, and that in its oxidative conversion to biliverdin (to which he assigned the formula $C_8H_9NO_2$), CO_2 is formed. The empirical formulae now accepted for bilirubin and biliverdin are $C_{33}H_{36}N_4O_6$ and $C_{33}H_{34}N_4O_6$ respectively. If Dr. Drabkin had mentioned this, it might perhaps have been easier for the reader to realize that none of the disputants in the bilirubin controversy had obtained the correct analysis, the most reasonable explanation being that none of them, including Thudichum, had sufficiently pure products. As one reads today the biochemical papers of the period 1850-1900, it is obvious that many first-class men repeatedly deluded themselves into believing that a given preparation represented a single substance. The experimental methods available to them were not equal to the task of separating and purifying complex compounds whose chemical structure was only dimly perceived. Even today this problem is incompletely solved for substances such as the nucleic acids. It would perhaps have been helpful to the reader of Dr. Drabkin's book if he had discussed these difficulties in connection with the "protagon" controversy, where Thudichum was clearly correct in stating that the "protagon" of Liebreich and of Gamgee were mixtures. However, Thudichum was as much a man of his time as the men whose work he criticized. Although he may have been more careful in his experimental work than his adversaries in the controversy, the methods at his disposal did not permit him to separate many mixtures that he designated single substances, and the names he assigned to them (*e.g.*, kephalic acid, amidomyelin, amidokephalin, assurin, bregenin) have disappeared from the biochemical literature. Like other scientists, Thudichum was capable of error, and Dr. Drabkin might have mentioned Thudichum's insistence (even in the 1901 edition of the book on brain chemistry) that the nitrogenous base of lecithin is not Strecker's choline but "neurin," which Thudichum considered to be a different substance. In this connection it might have been worth noting Strecker's use, in 1868, of cadmium and platinum salts, since they later played a decisive role in Thudichum's work. Dr. Drabkin rightly praises Thudichum's discovery of "luteine" as one of the steps in the study of carotenoids and their role in vision (p. 105), but he does not mention

Thudichum's criticism of Kühne's work showing the importance of the retinal pigment rhodopsin in the visual process (*Annals of Chemical Medicine,* vol. II, pp. 64ff.). To indicate these shortcomings would not have lessened the stature of Thudichum's scientific efforts, but would have made more readily understandable the difficulties and uncertainties of the biochemistry of his time, as well as Thudichum's occasional fallibility in that sharp criticism which evoked the enmity of many of his contemporaries. In fairness to Dr. Drabkin, it should be added that he refers to the uncertain status of "kryptophanic acid" isolated by Thudichum from urine, and to the supposed new amino acid "glycoleucine" (from brain) which later work showed to be racemic leucine.

As an advocate of Thudichum's cause, Dr. Drabkin has presented a strong brief. In the reviewer's opinion, he has been less successful in describing Thudichum's place in the development of biochemistry. By writing for the nonscientific reader and by emphasizing the personal elements of family life and of controversy so important in understanding Thudichum the man, Dr. Drabkin has perforce glossed over the limitations imposed on Thudichum the scientist by the methodology of his time. Nevertheless, by writing this book, Dr. Drabkin has rendered a valuable service to students of the history of biochemistry. The three parts of the text (The Man, His Time and Contemporaries, His Works) contain many illuminating, and hitherto unpublished, items of information about Thudichum. In the first of the five interesting appendixes, Dr. Drabkin has supplied the most complete available bibliography of Thudichum, and in another has given the text of unpublished correspondence with Liebig, Virchow, Hoppe-Seyler, and Pflüger. There are 52 figures, many of them of exceptional biographical interest. Dr. Drabkin's discursive text, with frequent allusions to topics only remotely related to his subject, occasionally makes it difficult to follow the thread of his story. But it is a fascinating story nonetheless, and we should be grateful to Dr. Drabkin for his labor of love in preparing this impassioned account of the life and work of a great pioneer in biochemistry.

SIR GORDON GORDON-TAYLOR and E. W. WALLS. *Sir Charles Bell. His life and times.* Edinburgh, E. & S. Livingstone, 1958. vii, 228 pp., 49 illus. £2. 2s.

Reviewed by RICHARD A. HUNTER, *Psychiatric Registrar, The National Hospital, Queen Square, London.*

THIS new biography of Sir Charles Bell is most welcome. Its authors are well qualified for the task by their achievements in the fields adorned by their subject, being respectively Honorary Consultant Surgeon and Professor of Anatomy at Bell's own Middlesex Hospital. They have had access to the *Belliana* preserved in the archives of their medical school, which also provided financial aid for publication. The result is a beautifully produced,

extensively illustrated book admirably suited to introduce Bell to the present generation of medical men.

The first 175 pages are devoted to a consecutive account of the life and work of Bell, interspersed with thumbnail sketches of other dramatis personae. Two chapters entitled "The London of Charles Bell" and "Per Orbem Terrarum" link his life with the contemporary scene by asides like "If 1814 marked an epoch in the history of Middlesex Hospital as welcoming Charles Bell to its surgical staff, the year is also memorable for the opening of Lord's cricket ground on its third and present site in St. John's Wood." An appendix of 87 pages contains 21 interesting items such as a genealogy of the Bell family; Sir Charles Bell at Waterloo, with a catalogue of his watercolours illustrating battle wounds in the possession of the Royal Army Medical School Museum; his classification of the cranial nerves compared with Galen's; a reprint of the rare *Idea of a New Anatomy of the Brain,* London, 1811 (of which at least 10 and not 5 copies are now known); cases of Bell's palsy from his writings and lectures; his introductory address on the opening of the University of London, 1828, and of the Middlesex Hospital Medical School, 1835; and an appreciation of Lady Bell. Finally, there is a "Bibliography of published works by and relating to Bell" which would more correctly be called a handlist as it contains no bibliographical details and is incomplete. The book is remarkably free from printing errors although his Bridgewater treatise was first published in 1833, not 1838 (p. 159), and *Sir* Charles Singer is laudable but incorrect (p. 163).

As the authors are not professional biographers or historians it would be unfair to criticize the book by the standards of modern historical scholarship. They certainly have not fallen into the common trap of excess veneration for their hero, in fact they are inclined to do him less than justice, perhaps because they have ignored some of his interests. For example, they do not mention his evidence before the Parliamentary Committee on medical education (1834); his contribution to forensic pathology (J. A. Paris and J. S. M. Fonblanque, *Medical Jurisprudence,* London, Phillips, 1823, vol. 3, pp. 13-18); and his support of the Society for the Diffusion of Useful Knowledge. Neither is it quite fair to call his "tendency to moods of depression, and periods in which he appeared to lack self-confidence" "defects . . . in personality" (pp. 3-4).

They also tend to undervalue his scientific achievements. They consider that "Whatever the final verdict of history may be concerning Bell's stature as anatomist, physiologist or surgeon, it can be asserted with confidence that his *Essays on the Anatomy of Expression in Painting* will ensure for him a lasting and deserved reputation" (p. 25)—an astonishing verdict in view of his fundamental contributions to neurology. M. Neuburger (*Die historische Entwicklung der experimentellen Gehirn- und Rückenmarksphysiologie vor Flourens.* Stuttgart, Enke, 1897, pp. 302 ff.) in his history of neurophysiology acclaimed him as one of the great figures in medicine whose work, quite

apart from his neuroanatomical discoveries, made possible all subsequent researches into the function of the spinal cord, as well as giving enduring support to the then dying doctrine of localization of function in the brain. F. J. Cole (Bell's Law. *Notes and Records of the Royal Society of London,* 1955, *11,* 222-227) compared his discovery of one-way traffic in the nerves with Harvey's discovery of one-way traffic in the blood vessels—the Bell-Magendie controversy notwithstanding.

Their final assessment is disappointing as it would fit equally any hard-working country practitioner: "Kindly, and in the best sense of the word, simple, he will be remembered as one who, loving his fellow men, laboured unceasingly in the relief of suffering; who, seeking to broaden man's comprehension of nature, met success with humility and adversity with fortitude; and in all things recognized a Power transcending that of the world" (p. 175).

One is grateful to the authors for this stimulating book on one of England's greatest medical men which assembles much material about him. For those who want a more intimate picture of the man, his *Letters* edited by his brother, G. J. Bell (London, Murray, 1870) are still invaluable. The book leaves a keen sense of want of an analytical bibliography of Bell's writings as well as of a history of neurology, the discipline most directly and uniquely indebted to him.

MAURICE DAVIDSON. *Memoirs of a Golden Age* [of Oxford physiology, etc.]. Oxford, Basil Blackwell, 1958. xvi, 140 pp., 30 plates. 18s.

Reviewed by the EDITOR.

THIS volume is a fitting sequel to an earlier book by Dr. Maurice Davidson, *Medicine in Oxford. A Historical Romance.* The "Memoirs" are made up principally of well-told anecdotes concerning the Oxford of the author's undergraduate days at the turn of the century, when he was preparing for final Honour Schools in physiology under John Scott Burdon-Sanderson, *Bart.* (1828-1905) and his successor, Francis Gotch, *Kt.* (1853-1913). Apart from the book's puzzling title—which might call to mind the Age of Pericles, rather than the Oxford recently emancipated from John Henry, Cardinal Newman (whose portrait graces Dr. Davidson's frontispiece)—it is in every way admirable and it will be of particular interest to all Oxford men of medicine. Newman (1801-1890) to whom the first chapter is devoted had sought to dislodge the philosophical teachings of Benjamin Jowett (1817-1893) and replace them by a pontifical concept of an infallible church of Rome—which, happily for Oxford, had proved more difficult than growing lilies on the chalk cliffs of Dover. Davidson, however, is well aware that Oxford had chosen to admire the Newman of 1852, John Henry Newman, parson, the clear-thinking Anglican disciple of academic freedom, before he had donned the pontifical Mitre's Cap (1879). For it was in 1852 that young Newman had propounded his idea of a University as a place for teaching universal knowledge and his belief that the diffusion of knowledge is more

important than its advancement. This was a University uninfluenced by the Church and this was the Newman of an open, scintillating mind—the Newman that Oxford likes to remember.

This is the revealing story that the modest author of the "Memoirs" relates to us in his "Introductory," and it serves admirably as backdrop for the remainder of the volume and especially for Chapter II "Of Medicine and Science" in which, incidentally, he plays high tribute to Professor K. J. Franklin's "A short sketch of the history of the Oxford Medical School" (*Annals of Science*, 1956, *1*, 431-446). This chapter is enlivened by the "Spy" cartoon of the absent-minded Waynflete Professor of Physiology (appointed in 1883), the fine portrait of Henry Wentworth Acland (1815-1900), the beloved Regius Professor of Medicine, and a diverting photograph of Acland conversing with his most distinguished and ever difficult patient John Ruskin (1819-1900).

There is much else in the book to interest the more general reader such as Chapter III "Of Heads of Houses" with a "Spy" on Spooner and his "isms"—and on other celebrities. Chapter IV "Of Ecclesiastics" deals entertainingly with the begaitered bishops, deacons, and parsons—chiefly Anglican but including the "Oriel fathers," Oriel the College of Newman, which permitted its "Fellows and Fathers" to enjoy its well-stocked cellars. Davidson concludes his chapter on Oxford medicine with this handsome tribute to Sherrington:

> "One can hardly conclude these memoirs without some reference to Sir Charles Sherrington, who was appointed to the Waynflete Chair of Physiology on the death of Francis Gotch in 1913. Sherrington also came from Liverpool, and it is impossible to conceive a more satisfactory successor to his old colleague. His work in physiology and his eminence in the world of scientific research are too well known to need repetition. In the University of Oxford, as elsewhere, he was not only admired for his brilliance, but was beloved for his wonderful humility and grace. Truly must it be said that from every point of view the Physiological Department could have had no better Director."

Linnaeus Commemorated: 1707—May 23rd—1957. Addresses delivered at the Academic Session in the Ridderzaal of the Town Hall, Haarlem. Communication No. 103 from the National Museum for the History of Science. Leyden, 1957.

Reviewed by CONWAY ZIRKLE, *Professor of Botany, University of Pennsylvania, Philadelphia.*

CAROLUS LINNAEUS had explored Lapland. With his students he had studied the mines of Falun. He had explored and collected through Dalecardia, where he met his future wife Sara Lisa, the daughter of Dr. Moraeus. His future father-in-law insisted that he should get his degree and establish himself as a physician before he married. Linnaeus had already shown himself to be a master naturalist but he could not get his doctorate in Sweden. At

this time the Swedes had to get their degrees abroad, so Linnaeus went to Holland.

The great Boerhaave lectured at Leyden, but many students who attended these lectures found it cheaper to take their degrees at nearby Harderwijk.

> "Harderwijk is a town of nundination,
> They sell kippers, bilberries and diplomas of graduation."

Linnaeus reached Harderwijk on Friday, 17 June 1735. He registered as a student the next day. He was sponsored by DeGorter, who read the dissertation that Linnaeus had already written. The dissertation was accepted and two days later it was printed. Linnaeus passed his examinations and received his degree on 23 June 1735, five days after he registered. He was never one to waste time. Harderwijk has never regretted giving Linnaeus a degree.

Linnaeus remained in Holland for three years and during this period he became world-famous. In 1957, Holland as well as Sweden celebrated the 250th anniversary of his birth. The beautifully printed and illustrated brochure, reviewed here, contains the papers presented on 23 May 1957 at the celebration in Haarlem. They are: "Welcome and Introduction" by Professor H. J. Lam, "Carolus Linnaeus in Holland" by Professor H. Engel, "Linnaeus and Medicine" by Professor G. A. Lindeboom, and "Epilogue" by Professor H. J. Lam. The brochure contains some interesting and valuable Linnaeana.

H. C. SQUIRES. *The Sudan Medical Service. An Experiment in Social Medicine.* London, William Heinemann, Ltd., 1958. xii, 138 pp. 15s.

Reviewed by KENNETH D. KEELE, *Consultant Physician, Ashford Hospital, Middlesex, England, and Visiting Professor of the History of Medicine, Yale University School of Medicine.*

THE sub-title of this book, "An experiment in social medicine," conveys a good idea of its scope, which covers the development of the Sudan Medical Service from its very primitive beginning in 1904 through half a century to 1954. This account has been given by one who served the Sudan Government from 1908 to 1951. It is thus a first-hand story of a phase of medical history which has been completed.

It is interesting to note that from the first there was cordial co-operation between British, Sudanese, and (curiously enough) Syrians, in the initial stages of the organization of the Sudan Medical Service. This co-operation is aptly reflected in the foreword by Dr. Ali Bedri, Minister of Health, Khartoum, who has now become the first Sudanese director.

From the first, Sir Henry Wellcome took an interest in the affairs of the Sudan and equipped and stocked a pathological laboratory in Khartoum, the work of which is intertwined with all stages of the development of the Service. Sir Andrew Balfour, the first director, made his contribution mainly

in sanitary work, and it is remarkable to see that within a couple of years it was possible in Khartoum to sleep without a mosquito net for the greater part of the year. The energy with which these pioneer workers attacked their problems is also reflected in Dr. Squires' use of emetine for amoebic dysentery as early as 1913. These examples leave no doubt as to the high quality of the early Sudan Medical Service.

Chapters 2 and 5 of the book are devoted to the description of the history of epidemics and endemic diseases of the Sudan. These two chapters make a real contribution to the history of tropical diseases. Infectious diseases were found rampant in the native population but steady progress in their treatment through the years is recorded. These chapters also make interesting reading to anyone who has some experience of tropical diseases for they provide an epitome of the progress of methods of management in the last few decades. In all cases, Dr. Squires brings the story up to 1954, thus giving the reader a glimpse of the up-to-date picture. Poliomyelitis, cholera, and plague, he relates, are rare in the Sudan, but cerebrospinal meningitis and diphtheria appear to remain common. The strange distribution of diseases in the tropics remains one of the tantalising problems of geographical medicine. Sleeping sickness, as a result of the most energetic measures, appears to have been largely overcome, and we are told it is now less of a problem than leprosy.

As the story unfolds, we are taken through the period of the First World War which "scarcely touched the Sudan" except insofar as it made leave difficult for the medical personnel. During these years the Syrian medical officers became invaluable. Following that war there was a natural increase of medical staff amongst whom one of the best known was the brilliant young surgeon, Lawrence O'Shaughnessy, who ended his life so tragically in the summer of 1940 in the fighting outside Calais.

Lord Kitchener, then High Commissioner in Egypt, visited the Sudan in 1914. Within two years he had been drowned in the "Hampshire" off the coast of the Orkneys. He it was who first suggested the importance of founding a medical school in Khartoum, in order that Sudanese doctors should be trained in their own country. The building of such a school did not commence until 1922; it was opened by Sir Lee Stack in February 1924. The growth and growing pains of this Kitchener School of Medicine are well described and the success of its full recognition by the London Colleges in 1946 is a tribute to the energy and ability devoted to its organization and teaching.

This story, so clearly presented, ends upon a note of enquiry as to the future links between British and Sudan medicine, since now there naturally remains a diminishing British element. Though the British experiment is truly described as finished, the Sudanese experiment in social medicine can only now be said to have begun. One shares with the author the hope that the next fifty years will see as much successful progress as the last. The author is

to be congratulated in having compressed into 135 pages such an interesting and factual account of this social experiment which will make instructive reading to a wide range of doctors, not only those who have been in the Sudan.

W. KINDLER. *Die Geschichte der Oto-rhino-laryngologie in Berlin.* Stuttgart, Georg Thieme Verlag, 1956. 98 pp., 21 illus. $3.95.

Reviewed by DOUGLAS GUTHRIE, *Lecturer (Emeritus) in the History of Medicine, University of Edinburgh, Scotland.*

IN this short but important treatise, Professor Kindler, who spent five years in Berlin before he became Director of the University Throat, Nose and Ear Clinic at Heidelberg, has placed on record the story of the rise and development of that specialty in Berlin from its beginning until the year 1955. The history of a special branch of medical knowledge and of its evolution in a great medical school such as that of Berlin is an important work, supplying information on men and events which might otherwise be forgotten. Oto-rhino-laryngology, to give the subject its correct though clumsy name, is scarcely a century old. Otology was at first a small part of surgery, often the prerogative of a junior surgeon, while laryngology was regarded as coming within the scope of the physician, and a few physicians became skilled in the use of the laryngoscope. Although they arose separately in this fashion, otology and laryngology ultimately became fused into an branch of medicine. It was natural that such fusion should take place at an earlier date in the smaller German universities than in the large centres. Consequently, it was not until 1926, after the death of the eminent otologist Adolf Passow (b. 1859) that his chair in the University of Berlin became united with the chair of laryngology. The first occupant of the new chair was Carl von Eicken (b. 1873), to whom the book is appropriately dedicated. The work is divided into two almost equal parts, the first dealing with otology, the second with laryngology. Before the time of Passow, a university polyclinic had been founded in 1874, and during the early years of the present century the number of patients who attended the ear clinic rose to the high figure of 10,000 a year.

Among early pioneers of otology in Berlin were Lucae and Trautmann, but one of the first to attain world-wide fame was W. Kramer (1801-75) who, although he did not invent the Eustachian catheter, was one of the first to describe and to use it. Well-known Berlin otologists of later date were G. Bruhl (1870-1939) and A. Hartmann (1849-1931) both of whom had studied under Politzer of Vienna at a time when that city shared with Berlin a high reputation as a postgraduate school, attracting students from many countries, especially America. As for the sister specialty of laryngology, it came into being after the discovery of the laryngoscope by the singing master Manuel Garcia, who was probably surprised to find that he had founded a new branch of medicine. That was in 1854, and a few years later Turck of Vienna and

Czermak of Budapest adapted the instrument to its present clinical use. Early laryngologists in Berlin were G. R. Lewin (b. 1820) and A. Tobold (b. 1827), but it was not until 1887 that the University polyclinic for nose and throat diseases was founded and placed under the care of Bernhard Frankel (1836-1911). A contemporary who wrote an important textbook was P. Heymann-Heims (1849-1931).

Another laryngologist of world-wide fame was G. Killian who came from Freiburg in 1911, having already become well known for his discovery of endoscopic technique and equipment. W. Albrecht, A. Seiffert, and J. Soerensen continued the work, and there were many others whose contributions are noted in this work. The author has been well aware that no account of laryngology in Berlin could be complete without reference to the pioneer researches of the Gutzmann family in the treatment of disorders of speech and voice. The success of speech therapy, now so highly developed, stems largely from their efforts. The bibliographies indicate the scope and extent of the work of the Berlin school in oto-rhino-laryngology, while the excellent portraits add to the human interest. It is unfortunate that there is no key to the photograph of 26 teachers of laryngology and otology in Berlin in 1920 (page 67), although each is clearly numbered. Nevertheless, the book is a worthy record of useful and important work.

JOHN HUGHLINGS JACKSON. *Selected Writings.* 2 vols. Edited for the Guarantors of *Brain* by James Taylor, with the advice and assistance of Gordon Holmes and F. M. R. Walshe. New York, Basic Books, Inc., 1958. Vol. 1: xiv, 500 pp.; Vol. 2: viii, 510 pp. (pp. 485-498, Jackson bibliography, 1861-1909). $15.00 the set.

Reviewed by the EDITOR.

THIS is a page-for-page offset reprint of Dr. James Taylor's original two-volume edition published by *Brain's* Guarantors in 1931. It is well executed technically, being both highly legible and stoutly bound in heavy green linen. In a Publisher's note at the end of Dr. Taylor's original Preface of April 1931, Basic Books expresses its gratitude to the Guarantors of *Brain* for permission to reprint "this neurological classic," adding their hope that this new printing will be of value to students of this generation as well as those of the future. The original edition is too well known to require detailed comment; since it has been long out of print, this offset edition will give students of medicine, including young neurologists, opportunity to have this great classic which is indispensable to anyone who concerns himself with the historical aspects of medicine. There can be little question that Jackson occupies as unique a position in the history of modern neurology and one as important as that of Sir Charles Sherrington in contemporary neurophysiology.

LORIS PREMUDA. *Storia dell'iconografia anatomica.* Con un'appendice di Gaetano Ottaviani. Milano, Aldo Martelli, 1957. [xiii], 235 pp., 138 [+1] pl. and frontispiece. 4,500 lire.

Reviewed by DOROTHY M. SCHULLIAN.

THIS work, the outgrowth of an exhibit held at Verona in 1955, makes no claim to be definitive and is intended rather as a point of departure for future study in the field by historians possessing the necessary inclination and learning. The author moves in broadly chronological survey of anatomical illustration from prehistory through antiquity, the Middle Ages, and the Renaissance, giving extensive treatment to Leonardo and Vesalius and more hurried attention to the post-Vesalian anatomists and those of the seventeenth and eighteenth centuries. In 184 pages the story is carried to Canova; fifteen suffice for the late eighteenth and nineteenth centuries, and Gaetano Ottaviani, Director of the Institute of Normal Anatomy at the University of Parma, concludes with a chapter of seven pages on contemporary anatomical design.

While the book will not supplant Choulant as a tool of ready reference, it has two special merits which commend it to historians. Everywhere there is emphasis on the interplay between artists and anatomists; several plates which had not previously appeared in the histories demonstrate this relationship powerfully. In the second place, the author has combed the recent literature; there are still some gaps in his knowledge of American contributions, but his grasp of German writing on the subject is very firm and was suitably recognized when he was unanimously voted in the fall of 1957 a corresponding member of the Deutsche Gesellschaft für Geschichte der Medizin, Naturwissenschaft und Technik. The many references which he furnishes in footnotes and bibliography will be a great convenience to future workers in the history of anatomical illustration.

The Stamperia Valdonega in Verona, which did so commendable a job in printing the complicated material of Francesco Pellegrini's *Scritti inediti di Girolamo Fracastoro* in 1955, has done its work well also here, and gratitude is due the Glaxco Laboratories for their support. The wealth of plates, seven of them in color and an eighth folding, are superbly reproduced. Numerous inconsistencies and infelicities in bibliographical citation, forms of names, alphabetization, and the like mar the book, the more regrettably because they could have been easily remedied. Whoever sets out to *read* the book will need four bookmarks, one for his place, the second for the footnotes which occur not at the bottom of each page but at the end of each chapter, the third for the general bibliography on pages 209-217 to which he will wish to refer often, and the fourth for his place in the plates, all of which except the frontispiece are grouped together between the index of names (pp. 218-224) and the list of the plates (pp. 225-235). It is pleasant to record that the salient points of the plates are admirably described in the

text itself; this author has *studied* the plates, and his comments on them are apt and helpful.

PAUL R. GOODE. *The United States Soldier's Home.* Richmond, Virginia, William Byrd Press, Inc., 1957. xiv, 289 pp.

Reviewed by ROBERT J. T. JOY, *Captain, MC, Walter Reed Hospital, Washington, D. C.*

EVERY so often a gifted amateur produces a monograph which captivates the reader wholly through interest of the subject and the manner of presentation. Usually the topic is one close to the author's heart, but when to delight in the telling of the tale is added sound scholarship and a facile pen, the reader enjoys an extra bonus of pleasure. Such a story is here told by Colonel Goode. Readers of this Journal with an interest in asylums, domiciliary hospitals, specialty homes for "those tired at the end of a long journey," or military medical history, will find new information attractively and authoritatively presented.

The United States Soldier's Home in Washington, D. C. was first conceived in 1827 by James Barbour, Secretary of War. Foreign nations had such "army asylums" for their discharged professional soldiers, as did the U. S. Navy. In spite of several bills presented to the Congress, and the active support of President Jackson in 1833, no action was taken until 1851. Three men were primarily responsible: Major Robert Anderson, later the commander at Fort Sumter in 1861 when the War of the Rebellion began there; Jefferson Davis, then Senator from Mississippi; and Major General Winfield Scott, General-in-Chief of the Army from 1841 to 1861.

Few people know that the first money to found the Home was a sum of $100,000, which General Scott levied on Mexico City during the Mexican War in 1847 and which he deposited to the credit of the then nonexistent "Army Asylum," successfully defending his right to do so when the Secretary of War tried to sequester the money.

Colonel Goode develops his tale of the Home side by side with a short but skilful running account of the growth of the nation and its Army. From 1790 to 1860, according to the Bureau of Pensions, this nation fought 23 wars, all resulting in disabled or discharged soldiers for whom no Veteran's Bureau or decent pension plan was provided. Not until the foundation of the Soldier's Home was there any place for the retired professional soldier to go if he were not able to adjust to the civilian economy. Many of these men had become public charges, recipients of a grudging charity, when they had been responsible for defending or extending the nation at considerable cost to themselves while on active duty.

The Soldier's Home stands as a unique entity in modern American life since not one cent of appropriated taxpayer's money has ever been used to support it. A monthly contribution of ten cents from all enlisted men of the Regular Army (and now the Regular Air Force also), the interest on General

Scott's Mexico City ransom, and the courtmartial fines of the Regular Army and Air Force provide its revenue. It is commanded by outstanding retired officers of the Regular Army, appointed by the President. All enlisted men of the Regular Establishment retired for length of service or for duty-incurred disability are eligible for admission, and the number of members has grown from 3 in 1851, to 1,804 in 1956. They are provided with a fine home, an opportunity to be gainfully employed, and superb hospital care. Most are old men, alone, with the debilities of age or disease preventing any useful civilian function.

The author is Deputy Governor of the Soldier's Home and has had access to much original data which he has used well. The statistics are in an excellent appendix, and there are many photographs of officers and men of the Home as well as pictures of some of the buildings, including the cottage where Abraham Lincoln spent his Washington summers and where he wrote the Emancipation Proclamation.

The book is warmly recommended to all interested in a little-known but fascinating story, told in the best of style.

LUDWIG BINSWANGER. *Erinnerungen an Sigmund Freud.* Bern, Francke, 1956. 120 pp.

Reviewed by GEORGE MORA, *Director of the Out-patient Department, Bradley Hospital, Providence, Rhode Island.*

ON the occasion of the centenary of Freud's birth in 1956, a large number of studies, commemorations, and articles stressed the importance of psychoanalysis in the history of modern culture. Such a wealth of material is still far from giving a complete judgment of the impact of Freud on contemporary thought. For the most part, these studies are by outsiders; in other words, people who did not have the opportunity of knowing Freud personally and of being close to him and to his environment.

The publication of this book which consists essentially of letters exchanged between Freud and Binswanger, is therefore of the highest interest for medical historians. For those who are not familiar with contemporary psychiatry in Europe, it is necessary to say that Ludwig Binswanger is the main representative of a movement called "existential psychiatry." Trained in the most stimulating school of psychiatry at the beginning of the century, that of Zürich, Binswanger descends from a family which has produced several psychiatrists in the last decades. He has been for almost half a century —from 1911 up to now—the director of the mental hospital of Kreuzlingen, in Switzerland, near Konstanz. However, this attachment to the institution has not prevented him from maintaining a constant interest in the most representative aspects of contemporary psychiatry and philosophy. More than a spectator, he has actively participated in the psychiatric movement, being among the first to apply existential philosophy to psychiatric thinking. His main works include *Einführung in die Probleme der allgemeinen Psychologie*

(1922), *Grundlagen der menschlichen Daseins* (1940) (doubtless his main contribution), *Ausgeähhte Vorträge und Aufsätze* (1955), and the very recent and stimulating *Der Mensch in der Psychiatrie* (1957).

From 1907, for over three decades, Binswanger maintained a friendly relationship with Freud ("one of the best gifts of my life," p. 68) whom he always considered his guide and teacher. Yet his thinking has progressively evolved further away from psychoanalysis toward a new synthesis of the human person. In this respect he has followed the common destiny of his Swiss colleagues—so clearly and bitterly outlined by Freud—of continuous detachment from the teaching of the Viennese founder.

The two main themes of the present book, the history of the early psychoanalytic movement and the history of Binswanger's relationship with Freud, almost converge at one major point—the ambivalence of the pupils in continuing the teaching of the founder and at the same time attempting to develop their own individual thinking. It is a struggle between tradition and independence which, far from being achieved, continues even today and represents the usual dynamics between the founder of a great movement and his followers. Here in this book, however, the dialogue between Freud and Binswanger acquires a unique character insofar as the latter, once a pupil, has become himself the founder—or at least the best representative—of a new psychiatric movement.

Hence the great interest of this correspondence, extending chiefly from 1909 to the early twenties, lies in the fact that it covers the most crucial period of the history of the psychoanalytic movement. The reader of Freud's biography by Jones will not find anything very new or exciting in this exchange of letters except some further details about the visit of Freud to Binswanger in Kreuzlingen in 1912, which was the breaking point of the relationship between Freud and Jung. What will probably impress him is the tone of sincerity in which they are written. In Freud's letters he will certainly notice the liveliness of the style, his typically incisive way of expressing himself, and—in later years—his underlying bitterness toward a world which had constantly objected to the discoveries of psychoanalysis. As Freud himself puts it in a letter of 1929, "I was eager to be kind to others, like you, but many have made it impossible to me." He will find Freud always attempting to gain support from the Swiss psychiatrists, especially from Bleuler, whose ambivalence towards psychoanalysis is well known. This is in spite of the defense of Bleuler made by Binswanger several times in the book.

Besides this, a large place is occupied by a picture of Freud in his personal life, as father or father-figure, always solicitous for the welfare of his children and of his friends. This is the main characteristic of this correspondence: the constantly friendly relationship of the two interlocutors of the dialogue, which persisted through the years in spite of their progressive scientific divergence. Ernest Jones in his biography of Freud (vol. 3, p. 170) has recently confirmed this point: "The friendship was never impaired,

despite a very considerable difference in their scientific and philosophic views." The events of life seem to have been parallel in the lives of these two men: each severely sick to the point of being considered lost, each deprived by death of a child, Freud's grandson and Binswanger's son. It is a similarity of destiny which is described in a vivid way both by Freud (p. 95) and by Binswanger (p. 108).

There is nothing very new in this book for the comprehension of Freud's or Binswanger's thinking. Freud stresses his viewpoint many times with his usual clarity; he remains at all times very critical of Binswanger's production, especially when the latter tried to establish the theoretical basis of psychoanalysis in the light of psychology (pp. 76-80). He constantly resented that Binswanger did not remain a true psychoanalytic follower. "Yes," wrote Freud to him in 1927, "the spirit is all. Men have certainly known it, as they have spirit; I have now to show to them that there are also instincts. But men are always unhappy, they always want something complete and ready; somewhere one has to start, however, and proceed forward only slowly" (p. 98).

Binswanger, on the other hand, still shows a considerable ambivalence toward Freud, emphasizing that he considers psychoanalysis as "one" of the branches of psychiatry (p. 32) but restating also his uninterrupted membership in the Swiss branch of the International Psychoanalytic Association (p. 50). Of course his system was not yet clearly formulated at the time that this correspondence took place. But he states—significantly enough—that only now that he has reached existential psychiatry can he fully understand psychoanalysis and how grateful he is to psychoanalysis for the development of his own thinking on man (p. 88). He finds that such a development has been made possible by the interaction of philosophy and psychoanalysis (p. 34) and that his role has been that of a mediator between psychoanalysis and psychiatry (p. 47).

But aside from these collateral issues (to which probably many will not subscribe), the main value of this book remains in the author's attempt to present Freud in his greatness apart from his importance as a founder of psychoanalysis. Freud's personality arises before the author's eyes "decided and appropriate in expression, measured in gesture, natural and open in mimicry" (p. 12). The reader cannot help but participate in Binswanger's admiration for "Freud's disregard for formality and etiquette, his personal charm, his simplicity, his natural frankness and generosity, and not least his humor" (p. 11). Perhaps many readers will disagree with Binswanger's statement that Freud had a true philosophical gift in spite of the fact that he was unaware of it (p. 16). Many others will agree instead with the author's criticism of Freud's opinion that "philosophy is one of the accepted forms of sublimation of repressed sexuality" (p. 19).

In spite of the reciprocal criticism of these two men, "our relationship [as Freud once wrote] is based on solid reasons of another nature and is

independent from such objections" (p. 85), and later on, "You don't know how agreeable I find such decent behavior" (p. 103). It is refreshing to follow through the years the development of a steady friendship in spite of the differences of age and of orientation between these two men. It is indeed an example which portrays better than anything else their moral integrity.

In conclusion, it is worth while calling attention to Binswanger's description of Freud's personality in his address delivered at Vienna on 7 May 1936 on the occasion of Freud's eightieth birthday:

> Viewed as an historical figure Freud remains for us the paradigmatic man of his century. As researcher he has not contented himself with attempting to reach the truth in his exhaustive work, he has also indicated the "method" as the only way to reach this goal; as a physician he has helped the individual with indefatigable patience to travel this way; as a man he shines before the world as a teacher of respect for the unknown forces of life, of confidence in the strength of scientific reason, of sincerity toward himself and toward the inexorable force of death.

This little book, modestly presented by the author as an exchange of correspondence, is an important contribution to the recent history of medical psychology. It makes valuable reading for all those interested in the development of this branch of medicine.

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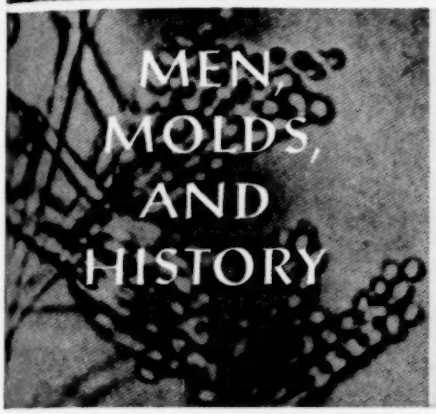

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